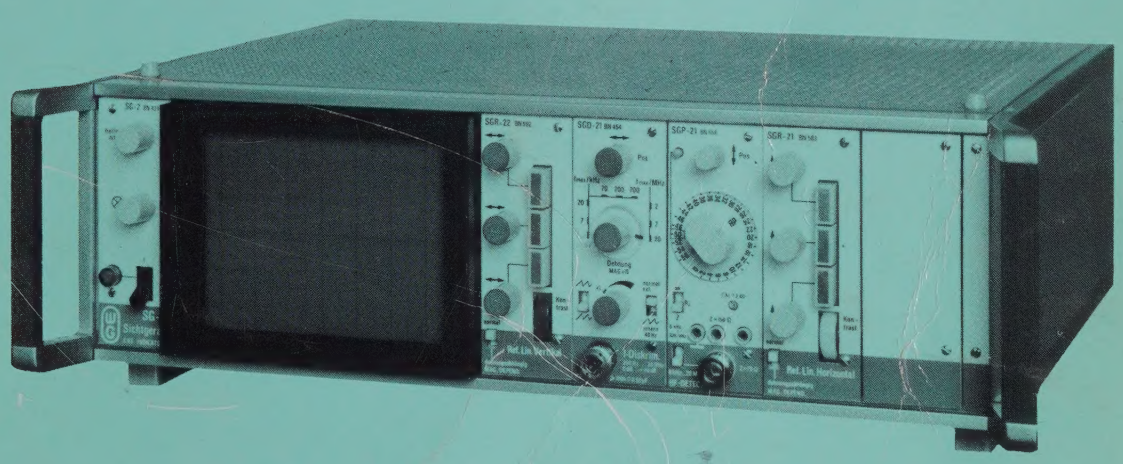
Description and
Operating Manual



MP MASTER
MA33513

GERMAN — ENGLISH TRANSLATION ON PAGES B-6, A-1, AND ALL SCHEMATIC SIGNAL FLOW CONNECTIONS

Display Unit

for sweep measuring sets

SG-2

QUALI SSURANCE
STANDA CALIBRATION, AND
MAINTENA E LAB.

DISPLAY UNIT SG-2

Description and Operating Manual 429 B...

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Introduction

Oscilloscopic presentation of swept frequency measurements of frequency dependent parameters such as attenuation, gain, signal balance ratio and return loss are amongst the most important tasks in the fields of telecommunications and electronics.

In contrast to point-by-point measurements, the swept frequency method offers noticable advantages: it permits discontinuities to be directly observed; for instance, transitory changes in attenuation as the curve is being plotted and also alignment procedures can be quickly and easily run through on filters, amplifiers and similar devices.

A Display Unit expands sweepable Measuring Set-ups into complete Sweep Measuring Set-ups. Thus, the measured results obtained with a Level Measuring Set PSM-4, -5, -7 or -8 can be presented in visible forms.

The use of Plug-In Units enables the Display Unit to be matched for optimum handling of the various tasks, and as well, to be used as an X-Y oscilloscope for presenting slowly traced measuring runs. Application of the line scanning raster technique offers the advantage of simultanious formation of several measured results and reference traces. Due to the Display Unit having the possibility of being fitted with three Y plug-in units, simultaneous observation of three different measurements processes can be made.

With the line scanning raster technique, the electron beam is keyed for blanking and is deflected in a vertical direction at a fixed scanning frequency. At the same time, the deflection in a horizontal direction is proportional to and results from the externally applied X voltage.

For the presentation of a measured result, the Y voltage which is to be traced is compared with the instantaneous voltage of the raster scanning signal. If both voltages achieve an equal value, then a spot shaped image appears on the scope screen because the beam is intensified by being momentarily keyed with an intensifying pulse. This process is repeated during each period of the scanning signal and results in the measured value appearing as dense sequence of spots on the screen. Due to the raster scanning method, there is an apparent limiting frequency which results from the selected scanning frequency; this is 16 kHz. Corresponding to this frequency, there can be formed a maximum of 17 spots on the screen.

For choice of Plug-in Units, there is available either the SGV-21 which was designed for application when combined with the Sweep Measuring Set-ups PSM-4, -5, -7 and -8, or the SGV-23 which is a multi-purpose, high impedance differential amplifier. Furthermore, the Plug-in Units contain both a comparator for the purpose as previously explained as well as the circuit for generating the intensifying pulses.

The X Amplifier Plug-in Units correspond to the Y Plug-in Units with reference to specifications and operating controls. Additionally, the possibility is offered of switching on an internally generated deflection signal of approx. 40 Hz repetition rate. Thereby, if the X deflection signal is not present, then the horizontal and vertical reference traces can be continuously presented. And for instance, the screen could be calibrated. When an external X deflection signal is applied, it is keyed at this 40 Hz rythm. With very slowly moving measuring runs, it is therefore possible to trace a measuring curve with simultaneous appearance of reference traces, and all traces are held in position on the screen.

The Plug-in Units for horizontal and vertical reference traces permit at any time three independent traces which can be presented with any one,of three,more prominant than the other two. Each of the traces is individually shiftable. The horizontal traces can be calibrated by means of the level indicating meter on the Receiver of the Level Measuring Set-up. A change-over switch on the Plug-in determines whether the positions of the traces are set-in by the pertinent setting position potentiometer or the applied X and Y Amplifier Plug-in Units. This last feature is an advantage when definite level or frequency values are to be used as calibrating values placed at definite positions on the screen. If more reference traces are needed, then at the same time there can be two parallel driven Reference Trace Plug-in Units.

For calibrating the X axis, frequency markers can be used. These are derived from marker pulses which are presented from an external source applied to a Marker Plug-in Unit. There are various types of marker display. Thus, the frequency marker can be a small pulse superimposed either on the measured result or on a selected reference trace. Additionally, either intensifying or blanking a spot is possible plus the triggering of a vertical line.
Along with externally triggered frequency markers, the Plug-in generates two shiftable vertical reference traces which can be calibrated by means of external frequency markers. End-to-end measurements on transmission systems are aided by a Frequency Discriminator Plug-in which furnishes voltage proportional to applied frequency. This voltage is then used for the X deflection of the Display Unit at the receiver location. The range of the Frequency Discriminator is adjustable in eight steps, and therefore many different measuring tasks can be accommodated.

With end-to-end swept measurements, a Level Measuring Plug-in Unit can replace the wideband level meter. This Plug-in Unit has an inbuilt calibration source which delivers two horizontal calibration traces for use in scaling the scope screen. The receiving range of the Plug-in is adjustable in 2 dB steps. Frequency Discriminator and Level Measuring Plug-in Units are internally connected together. If both are to be used together, then only the Level Measuring Plug-in need be externally controlled.

Summary of available Plug-in Units for a Display Unit:

SGV-21 Vertical Amplifier for PSM-4, -5, -7 and -8
SGV-22 Logarithmic IF Amplifier for PSM-8
SGV-23 Vertical Amplifier for universal use
SGH-21 Horizontal Amplifier for PSM-4, -5, -7 and 8
SGH-22 Horizontal Amplifier for universal use
SGP-21 Wideband Level Meter } for wideband end-
SGD-21 Frequency discriminator } to-end sweeping
SGR-21 Horizontal Reference Traces
SGR-22 Vertical Reference Traces
SGM-21 Frequency Markers

Additional Plug-in Units are being prepared.

1. SPECIFICATIONS

All essential characteristics of our instruments are indicated by guaranteed tolerance and limit specifications and not as typical values. They are valid for each instrument not only on delivery but also for the whole guarantee period.

1. Specifications

When not otherwise stated, the values for temperature, power line voltage and frequency given are valid after 15 minutes operating time in the rated operating range.

1.1. Main frame

Scope tube . . . . . M 17-11

Screen nomenclature . . . . . GM (P 7) LF (P 26) [1)]

Persistence decay to 10 % of initial value . . . . . 0.1 s to 1 s 5 s to 15 s
decay to 1 % of initial value . . . . . .3 s to 10 s 50 s to 150 s

Image height x image width . . . . . 85 mm x 120 mm

Graticule plate

Various versions depending on measuring task. Furhter information in paragraphs 1.3.1. and 5.2.

Graticule illumination . . . . . continuously adjustable

Connectors on the back panel

for the Level Measuring Sets PSM-4, -5, -7, -8 and Level Meter PM-161
for the Frequency Discriminator SGD-21 and Logarithmic IF Amplifier SGV-22
for Relay Change-over Switch RU-3

Horizontal and vertical outputs for connecting an X-Y recorder.

Plug-in Units . . . . . max. 5

Power supply

Power line voltage	Rated operating range
110 V	93.5 V to 121 V
117 V	100 V to 129 V
127 V	109 V to 141 V
220 V	187 V to 242 V
227 V	193 V to 250 V
235 V	202 V to 262 V

Rated operating range of power line frequency . . . . . 45 Hz to 66 Hz
Power consumption (including plug-ins) . . . . . approx. 70 VA
Meets German protective standards; class 1

Equipment dimensions

Bench model		19" Plug-in (DIN 41 494)	
Width with handles	478 mm	Width	443 mm
Height over-all	155 mm	Height	132 mm
Depth with handles	407 mm	Depth	353 mm

Weight (including plug-ins) . . . . . approx. 13 kg

Ambient temperature range

Range for storage and transport . . . . . - 25 °C to + 60 °C
Operating range limits . . . . . 0 °C to + 45 °C
Rated operating range . . . . . + 10 °C to + 35 °C

1. Specifications

1.2. Plug-in units

1.2.1. Vertical amplifier SGV-21

Input

3 pole CF connector or system connector (back panel)	unbalanced
Input voltage, allowable range	± 10 V
Input impedance	100 kΩ ± 2 %
Polarity, reversible	normal-inverted

Gain

Deflection coefficient per screen height	10 V ± 5 %
Magnification, continuously adjustable, factor	1 to 10
Bandwidth (- 3 dB) (by means of line scanning presentation of at least 16 spots per 1 ms)	0 to 100 kHz
Linearity, error limits referred to screen height	± 1.5 %

Position

Zero point shift	max. ± 5 screen heights
Zero point drift , limits referred to screen height	$\pm 3 \times 10^{-3}$/°C

Output (vertical output on back panel of main frame)

Output voltage	0.5 x input voltage
Output impedance	5 kΩ

1.2.2. Vertical amplifier SGV-23

Input

3 pole CF connector	balanced
Input voltage, allowable range	± 10 V
Input impedance, either side to chassis-ground	1 MΩ

Gain

Deflection coefficient, 3 ranges adjustable, per screen height	100 mV, 1 V, 10 V ± 5 %
Magnification, continuously adjustable, factor	1 to 10
Common mode rejection (f = 10 kHz)	≧ 40 dB
Largest allowable common mode voltage: in ranges 100 mV and 1 V.	± 6 V
in range 10 V.	± 40 V
Bandwidth (- 3 dB) (by means of line scanning, presentation of at least 16 spots per 1 ms)	0 to 50 kHz
Linearity, error limits referred to screen height	± 1.5 %

Position

Zero point shift	max. ± 5 screen heights
Zero point drift [2], limits referred to range 100 mV	$\pm 2 \times 10^{-2}$/°C
to range 1 V and 10 V	$\pm 4 \times 10^{-3}$/°C

Output (vertical output on back panel of main frame)

Maximum output voltage	5 V
Output impedance	5 kΩ

1. Specifications

1.2.3. Horizontal amplifier SGH-21

Input

3 pole CF connector or system connector (back panel)	unbalanced
Input voltage, allowable range	± 10 V
Input impedance	.100 kΩ ± 2 %
Polarity, reversible	normal-inverted

Gain

Deflection coefficient per screen width	10 V ± 5 %
Magnification, continuously adjustable, factor	1 to 10
Bandwidth (- 3 dB)	0 to 3 kHz
Linearity, error limits referred to screen width	± 1 %

Position

Zero point shift	max. ± 5 screen widths
Zero point drift, limits referred to the screen width	$\pm 3 \times 10^{-3}$/°C

Deflection

Switchable	internal-external
Deflection speed	max. 6 cm/ms
Rastering	16 spots/ms
Internal deflection frequency (triangular wave shape)	approx. 40 Hz

Image error resulting from change-over from internal to external deflection 3)
Limits referred to screen width. $\pm 1 \times 10^{-2} \pm 2 \times 10^{-3}$ x magnification factor

Output (horizontal output at the back panel of the main frame)

Output voltage, per screen width	± 2.5 V
Output impedance	5 kΩ

1.2.4. Horizontal amplifier SGH-22

Input

3 pole CF connector	balanced
Input voltage, allowable range	± 10 V
Input impedance, either side to chassis ground	2 x 1MΩ

Gain

Deflection coefficient, 3 ranges adjustable, per screen width	100 mV, 1 V, 10 V ± 6 %
Magnification, continuously adjustable, factor	1 to 10
Common mode rejection (f ≦ 10 kHz)	≧ 40 dB
Largest allowable common mode voltage: in ranges 100 mV and 1 V	± 6 V
in ranges 10 V	± 40 V
Linearity, error limits referred to screen width	± 1 %

Position

Zero point shift	max. ± 5 screen widths
Zero point drift 2), limits referred to range 100 mV	$\pm 2 \times 10^{-2}$/°C
to ranges 1 V and 10 V	$\pm 4 \times 10^{-3}$/°C

Deflection, output as with 1.2.3.

1. Specifications

1.2.5. Horizontal reference traces SGR-21

Number of reference traces 3

Shift range: in position "normal" . . . . . 1 screen height
in position "MAG. DEPEND" . . . . . 1 screen height x mag. factor

Error limits of the absolute value of a
reference trace with change in magnification . . . . . $\pm 6 \times 10^{-3}$ x screen height x mag. factor

Error limits of the reference trace which is indicated as a level value [5]
on a level meter (with Measuring Sets PSM-4, -5, -7 and -8)
additional to error of level meter . . . . . $\pm$ 2 % $\pm$ 0.15 % of reading

1.2.6. Vertical reference traces SGR-22

Number of reference traces 3

Shift range: in position "normal" . . . . . 1 screen width
in position "MAG. DEPEND" . . . . . 1 screen width x mag. factor

Error limits of the absolute value of a reference trace
with change in magnification . . . . . $\pm 5 \times 10^{-3}$ x screen width x mag. factor

1.2.7. Frequency markers SGM-21

Markers

Input galvanic coupled, 3 pole CF connector . . . . . balanced
(additionally, system connector on the back panel of the mainframe)

Pulse amplitude, allowable range . . . . . $\pm$ 10 V
Input impedance . . . . . approx. 10 kΩ

Marker presentation, switchable . . . . . pulse on measuring trace, reference trace, vertical line, intensified, blanked (not with ODW-81)

Vertical reference traces

Number of internal traces 2
Shift range (MAG. DEPEND) . . . . . 1 screen width x mag. factor

Error limits of absolute value of a reference
trace with change in mag. . . . . $\pm 5 \times 10^{-3}$ x screen width x mag. factor

1. Specifications

1.2.8. Logarithmic IF amplifier SGV-22

Input

Level range . . . . . 0 to - 100 dB
Input frequency (= IF of Level Meter PM-8) . . . . . 10 kHz
Input impedance . . . . . approx. 100 kΩ
Polarity, reversible . . . . . normal-inverted

Gain

Sensitivity, unmagnified. . . . . 100 dB per screen height
magnified (continuously adjustable) . . . . . 10 dB per screen height

Linearity, error limits in level range:
0 to - 80 dB . . . . . ± 0.4 dB
- 80 dB to - 90 dB . . . . . ± 1 dB
- 90 dB to - 100 dB . . . . . ± 2.5 dB
} ± 1.5 % of screen height

Operating mode, switchable . . . . . linear-logarithmic
Reading, switchable (heavy or light noise suppression) . . . . . slow-fast

Position

Zero point shift . . . . . max. ± 5 screen heights
Zero point drift, limits referred to screen height . . . . . ± 0.02 dB/°C ± 3 x 10^{-3}/°C

Reference trace, (indicated on Level Meter PM-8)

Error limits (additional to errors of PM-8)
in level range: 0 to - 80 dB . . . . . ± 1 dB
- 80 dB to - 100 dB . . . . . ± 2 dB

Drift of reading . . . . . ± 0.04 dB/°C

Output (Vertical output on the back panel of main frame)

Maximum output voltage . . . . . 5 V
Output impedance . . . . . 5 kΩ

1. Specifications

1.2.9. Frequence discriminator SGD-21

Input

Universal connector "Versacon® 9" on front and back panels . . . . . unbalanced
(internal connection to SGP-21)

Input impedance . . . . . 100 kΩ ‖ 50 pF

Input voltage, allowable range for 200 Hz to 10 MHz . . . . . 0 to - 40 dB
for 10 MHz to 20 MHz . . . . . 0 to - 36 dB

Frequency ranges

per screen width . . . . . 200 Hz to 7 kHz, 200 Hz to 20 kHz,
6 kHz to 70 kHz, 6 kHz to 200 kHz, 6 kHz to 700 kHz, 6 kHz to 2 MHz,
60 kHz to 7 MHz, 60 kHz to 20 MHz

Hysteresis of image with triangular wave sweep
in frequency range 200 Hz to 7 kHz, 200 Hz to 20 kHz . . . . $\leqq 3 \times 10^{-2} \times$ screen width $\times \frac{\text{sweep frequency}}{\text{Hz}}$

in the other ranges [4] . . . . . $\leqq 1 \times 10^{-3} \times$ screen width $\times \frac{\text{sweep frequency}}{\text{Hz}}$

External deflection voltage

Input voltage, allowable range . . . . . ± 3.5 V
Deflection coefficient per screen width . . . . . 7 V ± 5 %
Bandwidth (- 3 dB) . . . . . 0 to 3 kHz

Position and Magnification

Zero point shift . . . . . max. ± 5 screen widths
Zero point drift, limits referred to the screen width . . . . . $\pm 3 \times 10^{-3}$/°C
Magnification, continuously adjustable, factor . . . . . 1 to 15

Deflection

Switchable . . . . . internal-external
Deflection speed . . . . . max. 6 cm/ms
Rastering . . . . . 16 spots/ms
Internal deflection frequency . . . . . approx. 40 Hz

Image error resulting from change-over from internal to external deflection [3]
Limits referred to screen width . . . . . $\pm 1 \times 10^{-2} \pm 2 \times 10^{-3} \times$ mag. factor

Blanking

Keying the beam retrace, switchable . . . . . intensified-dark
Response time of blanking . . . . . approx. 500 µs

Output (horizontal on the back panel of the main frame)

Output voltage, per screen width . . . . . ± 2.5 V
Output impedance . . . . . 5 kΩ

1. Specifications

1.2.10. Wideband level measuring amplifier SGP-21

Coaxial input : coaxial Universal connector "Versacon® 9"

Frequency range	6 kHz to 20 MHz
Input impedance, switchable	75 Ω or ≧ 50 kΩ ‖ 30 pF
Return loss coefficient when terminated with Z_{in} = 75 Ω	≦ 0.015

Balanced input, 3 pole CF connector

Frequency range	6 kHz to 620 kHz
Input impedance, switchable	150 Ω ± 2 % or approx. 10 kΩ
Signal balance ratio	≧ 46 dB

Measuring range, adjustable in steps of 2 dB

Voltage level	- 56 dB to 0 dB
Power level	- 46 dBm to + 10 dBm

Magnification and Position

Image capability, adjustable	2 dB to 10 dB
Shift range	± 1 dB

Calibration

Scale and absolute value calibration by means of superimposing 3 traces having level values of:	.+ 2 dB, 0 dB, - 2 dB
Error limits of trace 0 dB (+ 10 dBm) after calibration in measuring range 0 dB (+ 10 dBm at 20 kHz)	± 0.1 dB
Error limits of the traces +2 dB, - 2 dB referred to 0 dB at 20 kHz	.± 0.05 dB
Additional error for other measuring ranges	.± 0.15 dB

Measuring error

Error limits of frequency response referred to 20 kHz

coaxial in frequency range: 6 kHz to 20 MHz	.± 0.15 dB
6 kHz to 35 MHz	approx. ± 1 dB
balanced in frequency range: 6 kHz to 620 kHz	± 0.1 dB
6 kHz to 2 MHz	.approx. ± 0.5 dB
Linearity, error limits	0.2 dB
error limits with use of the vertical output	0.07 dB

Outputs (on the back panel of the main frame)

Vertical output

Output voltage	.max. ± 2.5 V
Output impedance	5 kΩ

Connection for Frequency Discriminator SGD-21
(for example, to a frequency counter)

Output level at a load resistor >100 kΩ	approx. - 20 dB

Internal connection for signal-drive to a Frequency Discriminator SGD-21

1. Specifications

1.3. Ordering information

1.3.1. Main frame

Display Unit SG-2:	with CRT screen GM (P7)	BN 429
	with CRT screen LF (P 26)	BN 429/1
Transportation protective cover		DE 22

Graticules (one graticule is provided in the standard package):

divisions:	x = 14	y = 10 for general applications	SGS-201
	x = 10	y = 10 for general applications	SGS-202
	x = 10	y = 6 dB and 20 dB for PSM-4, -5, -7, -8	SGS-203
	x = 14	y = ± 5 dB, special for Plug-in in SGP-21	SGS-204

1.3.2. Plug-in units

Vertical Amplifier SGV-21 for PSM-4, -5, -7, -8	BN 580
Vertical Amplifier SGV-32 for universal applications	BN 646
Horizontal Amplifier SGH-21 for PSM-4, -5, -7, -8	BN 581
Horizontal Amplifier SGH-22 for universal applications	BN 647
Horizontal reference traces SGR-21	BN 583
Vertical reference traces SGR-22	BN 592
Frequency Marker SGM-21	BN 582
Logarithmic IF Amplifier SGV-22 for PSM-8	BN 591
Frequency Discriminator SGD-21	BN 454
Wideband Level Measuring Amplifier SGP-21	BN 656

The Plug-ins are available, if requested, with clamping devices on the operating knobs and blocking devices on slide switches.

1.3.3. Camera adaptor mount

FVR-4 (for Siemens Scope camera B 952)	BN 644
FVR-5 (for Tektronix camera, series C 50)	BN 673

Subject to change without notice

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1) Special version with longer persistence phosphor screen
Caution : The LF screen has a special phosphor layer. To prevent burnt spots, do not use too high an intensity. For this reason, it is advantageous to use the LF screen, only for applications where the persistence of the GM screen is not sufficient.

2) Internal resistance of source $R_i \leqq 10\ k\Omega$.

3) For presentation of static or slowly moving processes, the internal deflection generator can remain in operation. Horizontal and vertical reference traces are constantly visible. This is a rastered presentation having 40 spots/s.

4) Does not occur when the Wideband Level Measuring Amplifier SGP-21 is used for forming presentation of the level in the Y direction.

5) With the application of the Logarithmic IF Amplifier SGV-22, the error limits given in 1.2.8. are valid for logarithmic operation.

2. OPERATION

Information about series modification to the Main Frame SG-2/-3

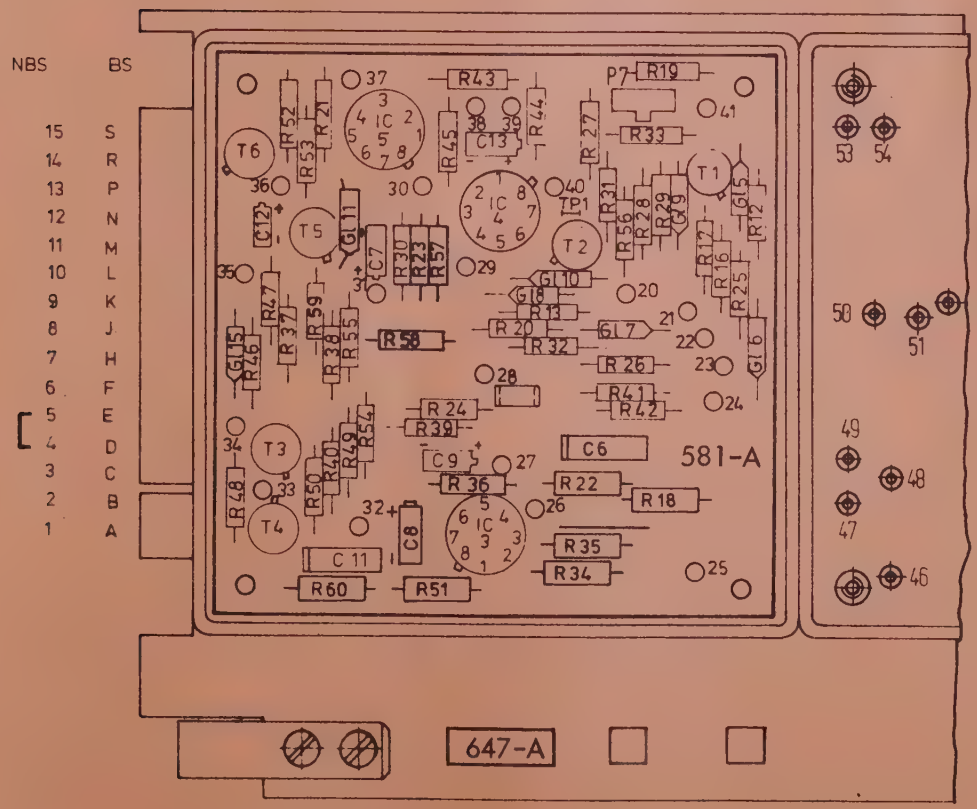
The **SG-2** commencing with Series E and the **SG-3** commencing with Series F operate according to a two raster method for writing on the CRT screen.

When the **SGH-22** and **SGD-21** Units are used, the Main Frame is switched-over to the single raster mode. This is accomplished via a control line which via contact 4 on the connector strip switches the Unit to chassis-ground.

For SGH-22 Units of Series A and B and SGD-21 of Series A through D, contact 4 accordingly is to be applied to chassis-ground if the Units are to be operated in the aforementioned Main Frames. This is best done by means of soldering a jumper bridge between contact 4 and contact 5.

When soldering the jumper bridge, attention should be paid to the following precautions :

- place plastic adhesive tape on the plug contact strip in a way that the contacts remain free for 0.8 mm on the inner ends
- use a rubber eraser to clean contacts 4 and 5 at the uncovered inner ends, carefully solder a piece of 0.4 mm jumper wire between contacts 4 and 5
- after removing plastic adhesive tape, clean the contact surfaces with methylated spirits (alcohol).



2. Operation

The Display Unit consists of a main frame and plug-in units for various measuring tasks.

2.1. Main frame

The SG-2 dependably operates in both positions : normal vertical face and also the front panel can be at an angle. To provide repositioning of the vertical front panel, the legs can be unfolded at the bottom of the equipment.

2.1.1. Operating controls

Fig. 2-1 shows the positions of the adjusting potentiometers and the a.c. power switch

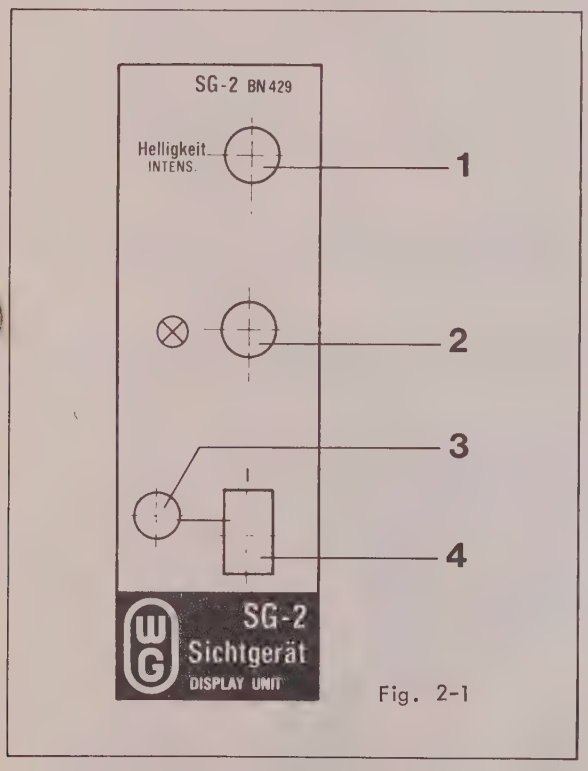


Fig. 2-1

1. Intensity

   Adjustment for intensity of trace on scope screen.
   Caution : The LF screen has a special phosphor layer. For this reason, do not set the intensity too high, because a burned spot could result.

2. Graticule illumination
   Setting the illumination of the graticule plate

3. Lamp
   For indicating ON-OFF of power

4. A.C. power switch
   "I" ON, "0" OFF

2.1.2. Position indicator

The screen mask has a lamp at each side (behind open arrows). If the signal over-drives the scope tube, then the lamps indicate the beam position.

2.1.3. A.C. power connecting

Before the equipment is switched ON, ensure that the a.c. power line voltage selector switch located on the back panel is correctly set. The selected voltage value appears in a window above the selector switch. Also the line fuse is accessible on the back panel. See Fig. 2-2. It is easily changed, and the value for all voltages is T 3 A (slow-blow).

The power cable, supplied with the set, should be connected at both ends; one end to the power line, the other end to the set. Immediately after the power switch is at "I", the pilot lamp illuminates. The equipment requires only a short time for the scope tube to warm up, and then it is ready for operation.

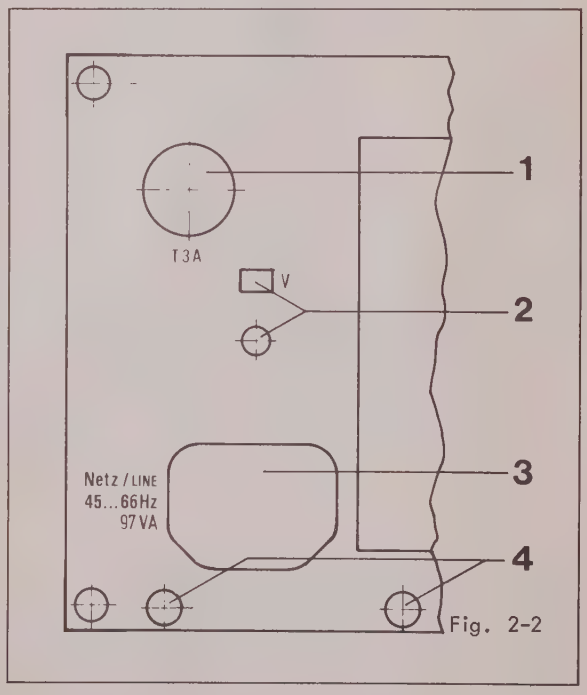


Fig. 2-2

1. Fuse
   Slow-blow fuse 3 A

2. Voltage selector
   For selection of correct a.c. power voltage. Selected value appears in window above voltage selector switch.

3. Power line connection
   Via included cable, connection to power line

4. Screws for fastening plug-in
   For exchanging plug-ins, see para. 2.1.7.

2. Operation

2.1.4. Equipment connections

The connectors for interconnecting the SG-2 with other equipments (level meter, X-Y recorder etc.) are located on the back panel of the display unit and are explained in Figs. 2-3 and 2-4.

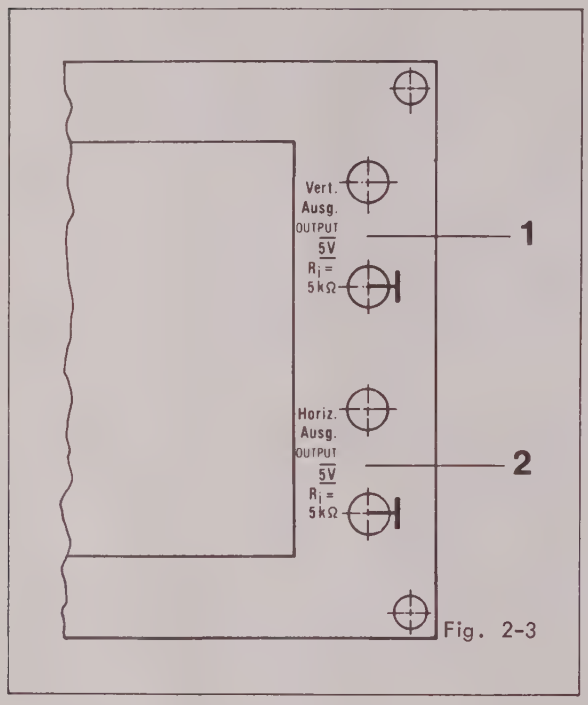


Fig. 2-3

1. Vertical output (Series A : blanking pulse-input)
   Output of the Y signal; $Z_{out} = 5\ k\Omega$, $V_{p-p} = 5\ V$.
2. Horizontal output
   Output of the X signal; $Z_{out} = 5\ k\Omega$, $V_{p-p} = 5\ V$.

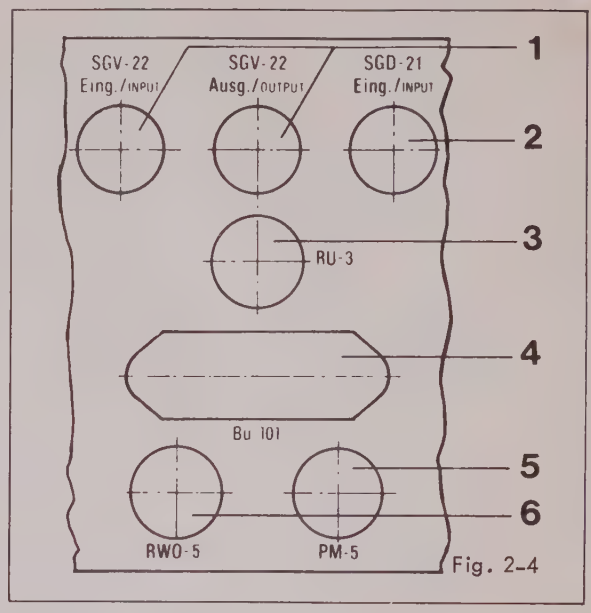


Fig. 2-4

1. SGV-22 : Input/Output
   Connections of the logarithmic IF amplifier plug-in SGV-22
2. SGD-21 : Input
   Parallel to input at the front panel of the frequency discriminator plug-in SGD-21.
3. RU-3
   Control pulse for a Relay Change-over Switch RU-3 in connection with SGD-21.
4. System connector Bu 101
   For connection to a Level Meter (e.g. PM-8)
5. PM-5 : connection to Level Meter PM-5
6. RWO-5 : connection to Control Oscillator RWO-5

2.1.5. Exchanging connector adaptors

The coaxial inputs and outputs of the main frame and the plug-in units are fitted with the 75 Ω Universal connector "Versacon ® 9" from Wandel u. Goltermann. Thus, a fast change-over is possible without soldering cable connections. The available adaptors are pictured below. The Universal connector is permanently fastened to the equipment chassis and by means of the mounting wrench (order no. W 1) the selected adaptor can be screwed on.

Fig. 2-5

Universal connector Versacon ® 9 | Lemo | BNC | 1.6/5.6 | 2.5/6 | 1.6/10 | Western Electric 558A

2. Operation

2.1.6. Arrangement of the plug-in units

The SG-2 can have up to 5 units plugged in. Bays 8a to 8 e connect the main frame to the plug-in units.

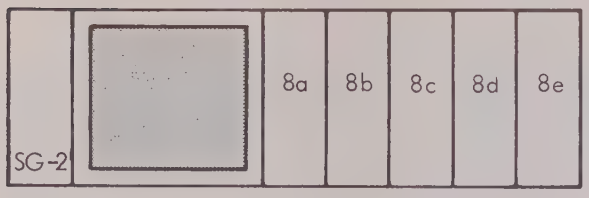


Fig. 2-6 Arrangement of places (plug-in bays)

2.1.7. Exchanging plug-in units

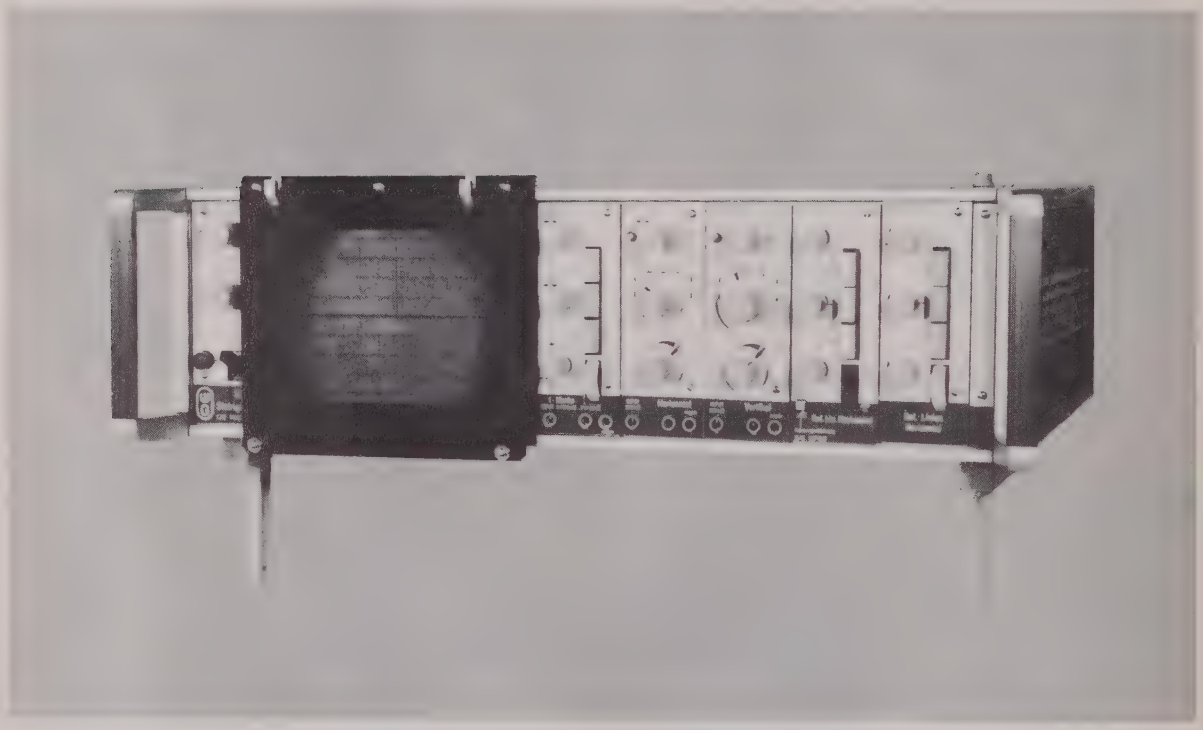
The plug-in units can be easily changed. Corresponding fastening screws are loosened at the back panel of the equipment (see Fig. 2-2), then the plug-in is pushed out of the contact strip, and the plug-in is pulled out at the front.

The other plug-in is guided in by means of the guide-rails and is pushed into the contact strip at the back. Then, the screws are tightened.

Notice :
The plug of the plug-in unit has high cost gold contacts to assure trouble free connection. Therefore, to prevent undue wear of the contacts, the plug-in unit should not be unnecessarily changed, or changed too often.

Place / Plug-in	8a	8b	8c	8d	8e	Notes
SGV-21			■	■	■	Combination with SGR-21 only possible in bay 8c
SGV-22			■			
SGV-23			■	■	■	Combination with SGR-21 only possible in bay 8c
SGP-21			■			
SGH-21		■				
SGH-22		■				
SGD-21		■				
SGR-21				■	■	
SGR-22	■			■	■	Contrast adjustment only possible in bay 8 a ×
SGM-21	■					Contrast adjustment also for SGR-22 ×
						× When bay 8 a is not in use, push button on SGR-22 should be depressed and reference traces appear.

Fig. 2-7 Arrangement of the plug-in units at definite places (bays)



Display Unit SG-2 with camera adaptor mount

2. Operation

2.2. Plug-in units

For simplifying the recognition of functions as to vertical or horizontal directions, the knobs which control vertical functions are light colored and the knobs for horizontal functions are dark.

2.2.1. Vertical amplifier SGV-21

The SGV-21 is specially meant for the Sweep Measuring Sets PSM-4, -5, -7, and -8. When combined with the Reference Traces Plug-in SGR-21, there can be a presentation of horizontal reference traces. These can be calibrated by means of one of the given Sweep Measuring Sets. For this purpose, the SGV-21 must be plugged into place 8 c.

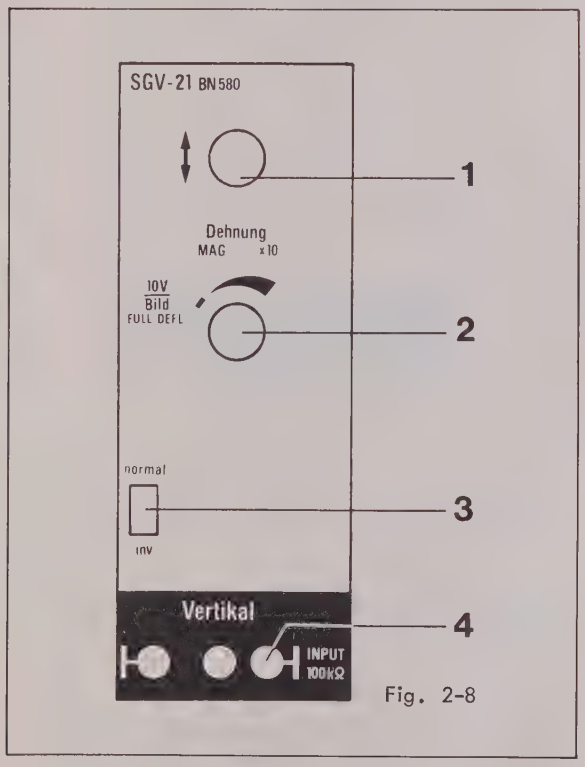


Fig. 2-8

1. Position
   Shifting the image, shifting range at full magnification: ± 5 heights of image
2. Magnification
   Magnification of the screen image
   Magnification adjustable from 1 to 10
3. Polarity
   Presentation of input signal either as "normal" or "inverted"
4. Input
   Unbalanced, Z_{in} = 100 kΩ
   Additionally, the signal can be fed in via the system connector of the main frame.

2.2.2. Vertical amplifier SGV-23

The SGV-23 is suitable for Sweep Measuring Sets which require an increased input sensitivity. Combined with the Reference Trace Plug-in SGR-21, it permits the injection of horizontal reference traces,and these can be used as calibrating traces when used with a corresponding Measuring Setup. (not with the PM-8). Therefore, the SGV-23 must be placed in bay 8 c.

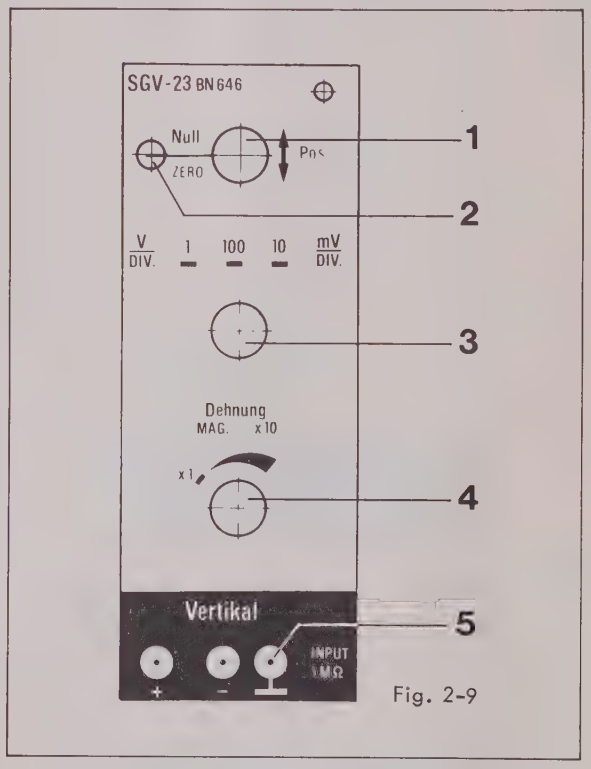


Fig. 2-9

1. Position
   Shifting the image, shifting range at full magnification: ± 5 heights of image.
2. Zero point
   Adjust with connected test specimen :
   Depress push button, shift zero point with "POSITION"
3. Sensitivity
   3 exact stages, each increased by a factor of 10 given values valid for magnification x 1. Magnification used to set intermediate values.
4. Magnification
   Enlarging the screen image,
   Magnification adjustable from 1 to 10
5. Input
   Balanced, Z_{in} = 1 MΩ

2. Operation

2.2.3. Horizontal amplifier SGH-21

The SGH-21 is required for the Sweep Measuring Sets PSM-4, -5, -7, and -8. When used with the Reference Trace Plug-in SGR-22, there can be presentation of vertical reference traces and calibration with one of the given Measuring Sets.

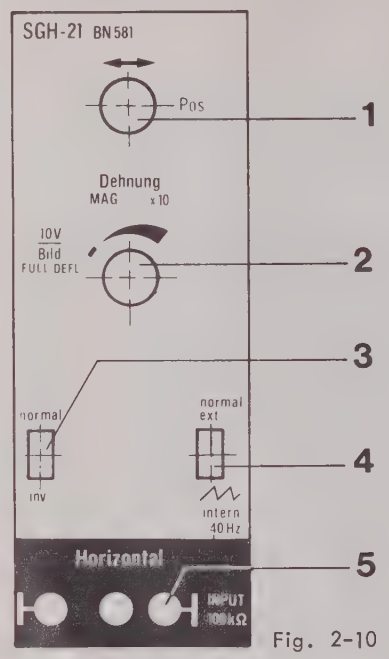


Fig. 2-10

1. Position
   Shifting of the image, shifting range at full magnification : ± 5 widths of the image.

2. Magnification
   Magnification of the screen image
   Magnification adjustable from 1 to 10

3. Polarity
   Presentation of input signal either as "normal" or "inverted"

4. Deflection
   "external" : Deflection by means of externally applied signal

   "internal 40 Hz" : Deflection by means of internal triangular wave shaped generator having a fixed frequency

   Worthwhile for sweep times > 1 s. The reference traces from the SGR-21, -22 form a flicker-free electronic raster which is independent of the externally applied deflection voltage.

5. Input
   Unblanced, Z_{in} = 100 kΩ
   Additionally, the signal can be fed in via the system connector of the main frame.

2.2.4. Horizontal amplifier SGH-22

The SGH-22 is used in Sweep Measuring Sets which require a larger input sensitivity. When used with the SGR-22, vertical reference traces can be injected and can be calibrated by means of a suitable Measuring Set.

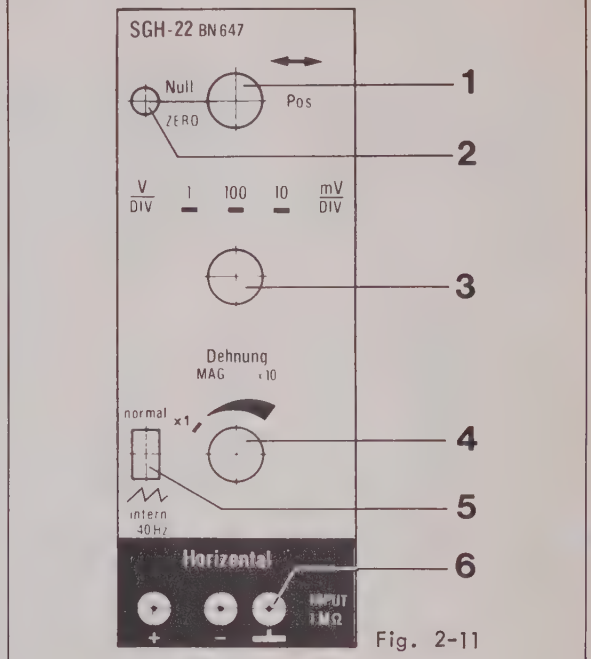


Fig. 2-11

1. Position
   Shifting the screen image, shifting range with full magnification : ± 5 widths of image.

2. Zero point
   Setting with test specimen connected :
   Depress push button, shift zero point by means of "POSITION"

3. Sensitivity
   3 exact steps, each increased by a factor of 10 given values valid for magnification x 1. Intermediate values can be adjusted by means of the magnification

4. Magnification
   Enlarging the screen image,
   Magnification factor adjustable from 1 to 10.

5. Deflection
   "external": Deflection by means of externally applied signal

   "internal 40 Hz": Deflection by means of internal triangular wave shaped generator having a fixed frequency.

6. Input
   Balanced, Z_{in} = 1 MΩ

2. Operation

2.2.5. Horizontal reference traces SGR-21

The SGR-21 delivers three horizontal reference traces, with which definite level values can be marked. A combination with a vertical amplifier is only possible when the vert. amp. is plugged into bay 8 c.

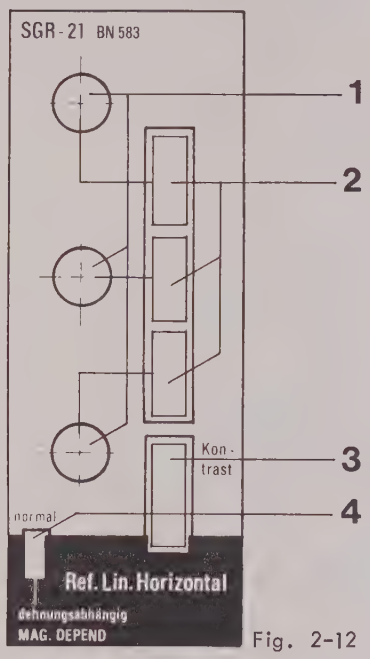


Fig. 2-12

1. Position shift
   Shifting in a vertical direction the horizontal reference traces on the scope screen.

2. Intensity
   Causing one trace to be more prominent :depress push button. The selected trace is intensified in comparison with the other two. In the Level Meter, the panel meter indicates the voltage marked by this trace. A frequency marker can be superimposed onto the predominantly intensified horizontal trace.

3. Contrast
   The intensity of the reference traces, the push buttons of which have not been depressed, can be adjusted with the potentiometer.

4. Measurement mode
   "normal": the position of the reference traces on the screen is independent of changes in POSITION or MAG: at the vertical amplifier.

   "magnification dependent": the position of the reference traces is changed with variation of POSITION and MAG: at the Vertical Amplifier. The absolute value (level) of the trace remains constant.

2.2.6. Vertical reference traces SGR-22

The SGR-22 presents three vertical reference traces for marking definite voltage or frequency values. Additionally it can present an external frequency marker as a vertical bar.

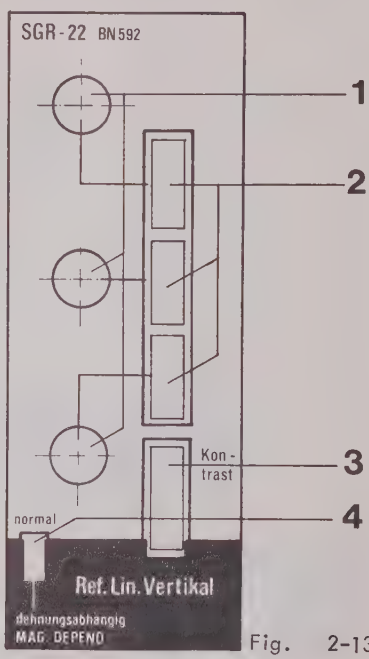


Fig. 2-13

1. Position shift
   Shifting in a horizontal direction the vertical reference traces on the scope screen.

2. Intensity
   Causing one trace to be more prominent: depress push button. The selected trace is intensified in comparison with the other two. In connection with a suitable Measuring Set, by means of this trace,there can be measured the coordinated frequency.

3. Contrast
   The intensities of the reference traces, the push buttons of which have not been depressed, can be adjusted with the potentiometer. Contrast adjustment is only possible in bay 8 a. In any other bay, the potentiometer has no effect. If SGM-21 is plugged into 8 a, then it also controls the contrast for the SGR-22. When bay 8 is not in use, push button on SGR-22 should be depressed and reference traces appear.

4. Operating mode
   "normal": The position of the reference traces on the screen is independent of changes in POSITION or MAG. at the horizontal amplifier.

   "magnification dependent": the position of the reference traces is changed with variation of POSITION and MAG. at the Vertical Amplifier. The absolute value (frequency) of the trace remains constant.

2. Operation

2.2.7. Frequency markers SGM-21

The SGM-21 converts externally applied pulses into frequency markers which can be presented in five different ways. Additionally, two vertical reference traces can be superimposed (magnification dependent).

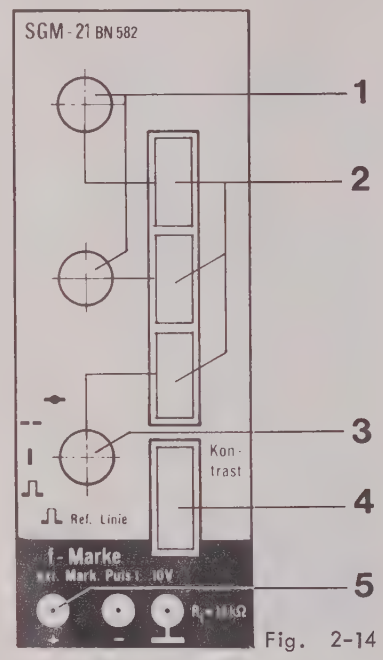


Fig. 2-14

1. Position shift
   Shifting in a vertical direction the horizontal reference traces on the scope screen.

2. Intensity
   Causing one trace to be more prominent : depress push button.

3. External frequency markers
   Representations of the external frequency markers.

"—●—"	Intensified points measuring trace
"— —"	Blanked spots measuring trace (not possible with PM-8)
" | "	Vertical bar
"⊓"	Pulse added to the measuring trace
"⊓ Ref. trace"	Pulse added to the horizontal reference trace, which at the time is intensified.

4. Contrast
   The intensities of the reference traces, the push buttons of which have not been depressed, can be adjusted with the potentiometer (also for SGR-22).

5. Input
   Balanced, Z_{in} = 10 kΩ, V_{in} = 1 V to 10 V
   Additionally the frequency marker pulse can be also applied via the system connector of the main frame.

2.2.8. Logarithmic IF amplifier SGV-22

The SGV-22 is specially intended for the Level Meter PM-8 (commencing with Series B). It enables either a linear or a logarithmic representation of the measuring signal. A range of 100 dB in logarithmic operation is possible for the presentation. Both modes of operation, linear or logarithmic, can be aided with the horizontal reference traces from the SGR-21. Thus, the measuring curve can be measured and calibrated.

Connections to the PSM-8 are located on the back panel of the Display Unit (see Fig. 2-4).

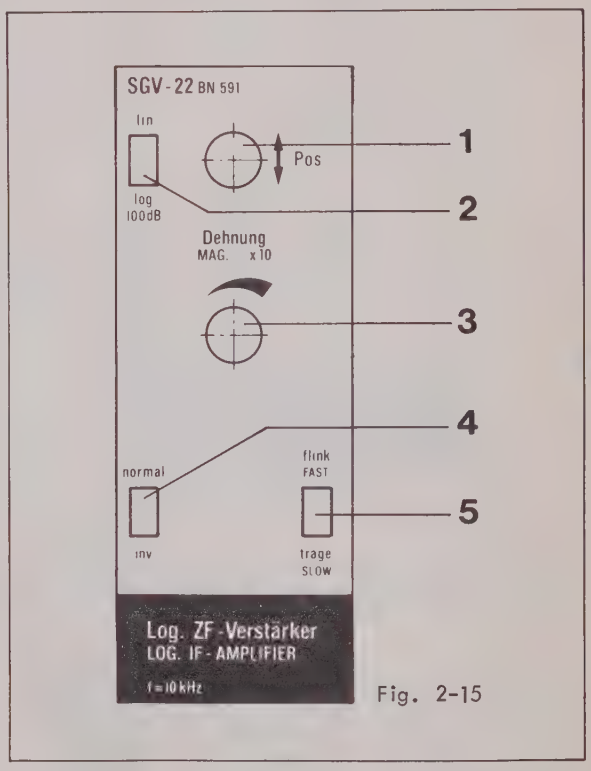


Fig. 2-15

1. Position
   Shifting the screen image, shifting range with full magnification : ± 5 widths of image,

2. Operating mode
   Representation of the measuring signal : "linear" or "logarithmic".

3. Enlarging the screen image,
   Magnification factor adjustable from 1 to 10.

4. Polarity
   Presentation of the input signal : "normal" or "inverted".

5. Indication
   Switch-over of indication : "fast" or "slow", (strong or weak noise suppression).

2. Operation

2.2.9. Frequency discriminator SGD-21

The Display Unit, when fitted with the SGD-21, is suitable for end-to-end sweep measuring. The SGD-21 recovers the horizontal deflection voltage from the generator frequency received at the receiver location. This is accomplished by means of the received frequency being converted to a proportional d.c. voltage, and it then is signal-drive for the horizontal power amplifier in the main frame.

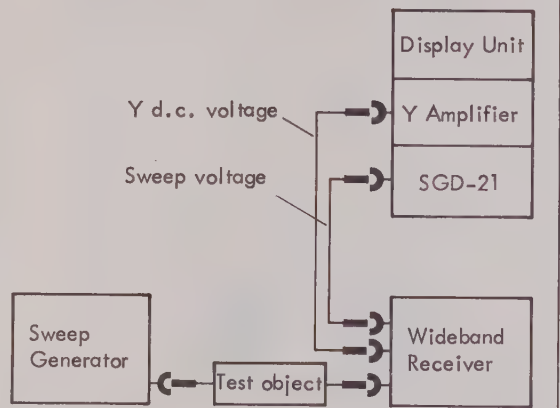


Fig. 2-16 End-to-end swept measurement with the Frequency Discriminator SGD-21

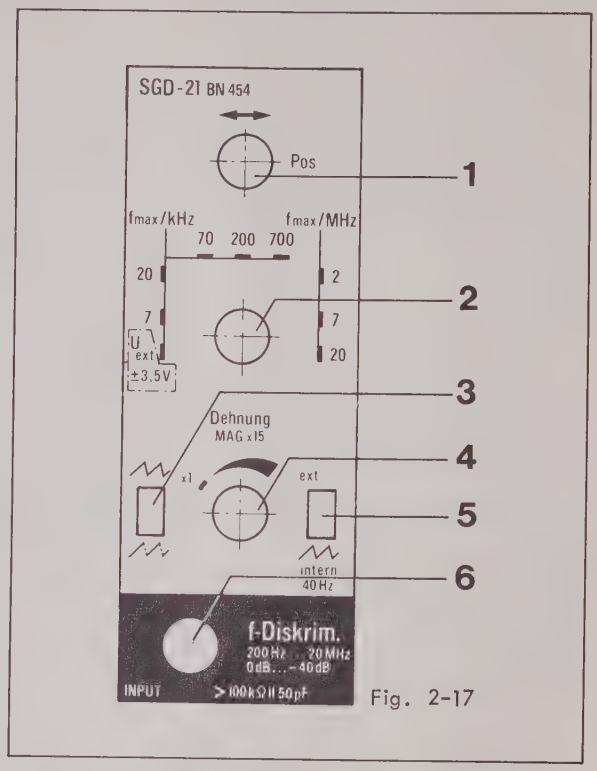


Fig. 2-17

Frequency range

The frequency range is divided into partial ranges which are matched to the system limits of the CF technology. The steps are arranged in a ratio of approx. 1 : 3.

When the frequency range switch is in position "$U_{ext.}$", the SGD-21 also can be used as a horizontal amplifier (e.g. instead of SGH-21). For this, it requires an input voltage of 7 V per screen width.

Frequency calibration

When used with the Plug-in SGR-22, there can be three vertical reference traces superimposed on the screen image,and these can be calibrated with a suitable Measuring Set-up (see 3.2.5.).

Signal-to-noise ratio

To prevent measurement errors, in the frequency range to 2 MHz, the noise level should be 20 dB less than that of the utilized signal. For the frequency range to 20 MHz, the separation should be 30 dB.

Relay Change-over Switch

The Frequency Discriminatorhas an output to the RU-3. This output located on the back panel of the main frame, (see Fig. 2-4) presents a pulse which controls a relay change-over switch (e.g. RU-3) for purpose of comparison measurements.

1. Position
   Shifting the screen image, shifting range with full magnification : ± 5 widths of image.

2. Frequency range
   Matching to the swept frequency range. In the position "$U_{ext.}$", the Plug-in operates as a horizontal amplifier.

3. Scan blanking
   "⋀⋀" Blanking the retraced beam
   "⋀⋀" Both forward trace and retrace of the beam are presented.

4. Magnification
   Magnifying the screen image, magnification adjustable from 1 to 15

5. Deflection
   "external": Deflection by means of the externally applied signal
   "internal 40 Hz": Deflection by means of internal triangular shaped wave generator having a fixed frequency.

6. Input
   Coaxial, Z_{in} = 100 kΩ II 50 pF.
   Input signal: Frequency = 200 Hz to 20 MHz,
   Level = 0 dB to - 40 dB

   Additionally, parallel input at the back panel of the main frame.

2. Operation

2.2.10. Wideband level measuring amplifier SGP-21

The SGP-21 replaces a wideband level meter at the receiver end when end-to-end measurements are made. Thereupon, the Display Unit can be optimally fitted for swept measurements over end-to-end paths; an SGP-21 and an SGD-21 are required.

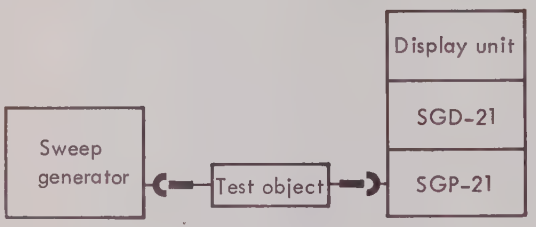


Fig. 2-18 Swept measurements with SGP-21 and SGD-21

An external connection to the SGD-21 is not necessary, because the plugging-in of the SGP-21 internally provides the driven signals. To prevent measurement errors, the input of the SGD-21 should be terminated with a dummy connector.

Calibrating the screen

Depress push button. On the screen, there can be seen the base-line trace and two calibration traces (if the X deflection is not present, then there are three spots). "Use "POSITION" to adjust the base-line trace, e.g. at the centre of the screen. Then, using magnification, move the calibration traces to the selected positions on the screen. Therewith, these positions now correspond to the values, + 2 dB and - 2 dB.

The adjusting range magnification is equal from ± 5 dB/screen height to ± 1 dB/screen height. If the screen is to be calibrated for larger magnification (± 1 dB screen height), then with the use of POSITION, the base-line should be moved to an edge of the screen, and with the use of MAGNIFICATION, the calibration trace should be adjusted to the other screen edge.

Retrofitting from dB to dBm

For this, on the SGP-21, there is a plug to be replugged. This is identified on the case of the Plug-in Unit (Fig. 2-20). Additionally, on the other side of the Plug-in Unit, a wire must be resoldered (Fig. 2-21).

Additionally, the scale disc should be replaced with a new disc scaled in dBm. To remove the control bar-knob, first the snap-on cover on the bar-knob is removed, and then the screw type collet is loosened in order to enable pulling off the knob. After the scale has been changed, the knob should be replaced and the screw tightened.

The dBm scale encompasses the range from - 46 dBm to + 10 dBm.

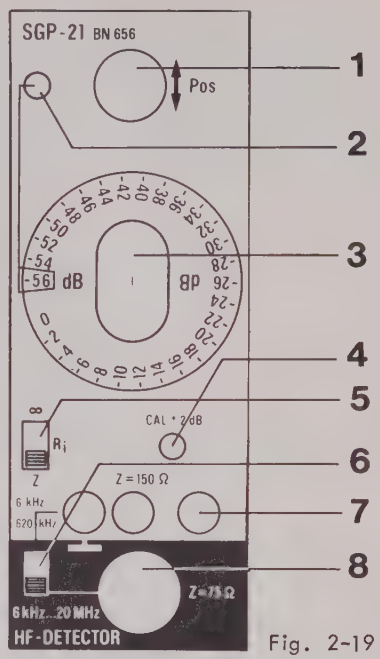


Fig. 2-19

1. Position
   Shifting the screen image, shifting range ± 1 dB

2. Calibration
   Depress push button. Three traces appear on the screen : + 2 dB, 0 dB and - 2 dB.

3. Sensitivity
   Input sensitivity of the amplifier is switchable in steps of 2 dB in the range from 0 dB to - 56 dB referred to the screen centre.

4. Magnification
   For the screen to be calibrated with the values + 2 dB and - 2 dB.
   Continuous variation from ± 5 dB/screen height to ± 1 dB/screen height

5. Impedance change-over
   Balanced input : 150 Ω or ≧ 10 kΩ
   Unbalanced input : 75 Ω or ≦ 50 kΩ

6. Input change-over
   Choice of inputs : balanced or unbalanced

7. Input
   Balanced, Z_{in} = 150 Ω; frequency range, 6 kHz to 620 kHz.

8. Input
   Unbalanced, Z_{in} = 75 Ω; frequency range, 6 kHz to 20 MHz.

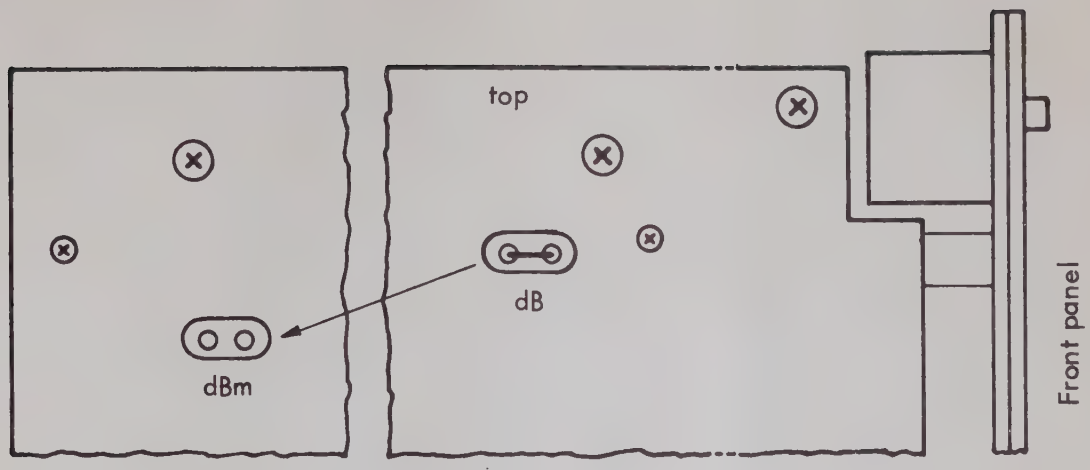


Fig. 2-20

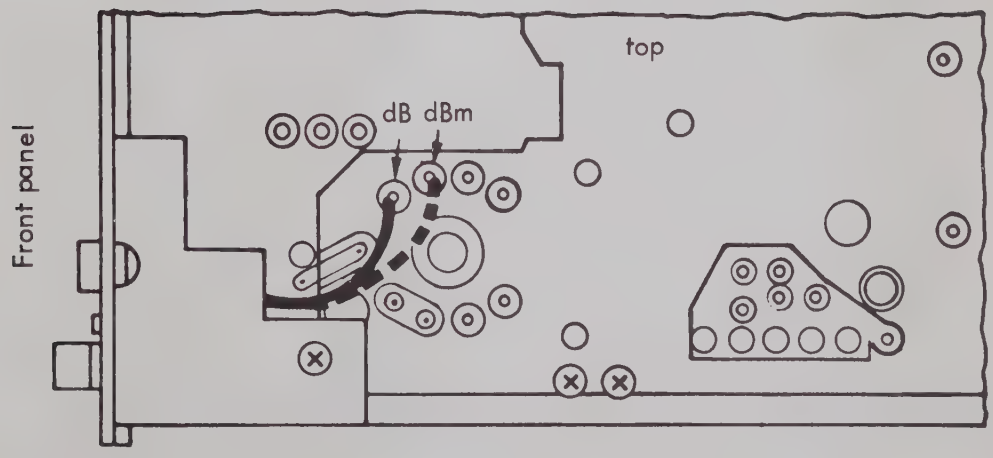


Fig. 2-21

3. TECHNOLOGICAL INSTRUCTIONS

3. Technological Instruction

3.1. Level calibration

3.1.1. Calibrating with the SGR-21

The Vertical Amplifier SGV-21 and the Reference Trace Plug-in SGR-21 are needed. Instead of the SGV-21, also the Logarithmic IF amplifier SGV-22 is suitable when the Level Measuring Set-up PSM-8 is used.

Place : SGV-21 in bay 8 c, SGR-21 in 8 d.

The SGR-21 provides three horizontal reference traces which can be calibrated with the indicating instrument of a level meter. A connection is required from the Level Meter (e.g. PM-4, -5, -7, -8) via a system cable to the Display Unit (system connector Bu 101).

Measuring the voltage of a reference trace :

Depress corresponding push button on SGR-21. The thereupon selected reference trace appears brighter than the other two traces on the screen.

The indicator on the Level Meter provides a reading for the corresponding value of level.

Setting to a definite value of level :

By means of the potentiometer, shift the position of the chosen trace until the level meter reading is at the desired value, and then the screen has been calibrated in the Y direction.

If no push button has been depressed, the indicating meter has the instantaneous level of the measuring signal.

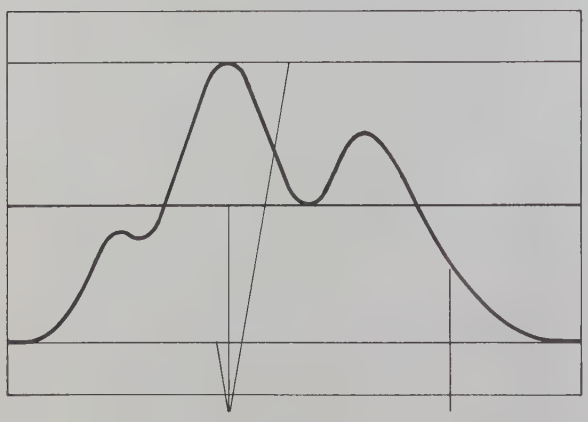


Fig. 3-1 Horizontal reference traces — Curve of the measuring signal

Example : horizontal reference traces for setting the value of level for a measuring signal curve. The centre trace is predominant (depressed push button). The indicator of the Level Meter provides a reading for the value corresponding to the trace.

3.1.2. Operating mode "normal"

When the mode switch on the SGR-21 is at "normal", a change in magnification at the Vertical Amplifier does not affect thepositions of the reference traces. However, the coordinated absolute value of level is changed as well as the differential level between the traces.

The positions of the reference traces are also independent of a position shift ("Position") for the measuring trace. Therefore between the traces the differential level remains constant. Here, the only change is absolute value.

3.1.3. Operating mode "MAG. DEPEND"

In this position of the mode switch, the positions of the reference traces change on the screen when magnification is changed or position is shifted ("position"). The absolute value of level and the differential level between the traces remain the same. Every trace, therefore, always marks the value of its calibration signal.

3.2. Frequency calibration

3.2.1. Calibrating with the SGR-22

The Horizontal Amplifier SGH-21 and the Reference Trace Plug-in SGR-22 are required.

SGH-21 placed in bay 8 b, SGR-22 placed in bay 8 a. Operating mode "external" switched in at SGH-21.

With the SGR-22, there can be represented three vertical reference traces, and these can be calibrated with the frequency markers from a suitable Measuring Set-up. Thereto, the Measuring Set is connected by means of system cable to the Display Unit (Bu 101).

In the following, the frequency calibration is described for Level Measuring Set-up PSM-8. It provides a frequency marker which appears as a vertical bar on the screen of the Display Unit. Sweep limits are set-up at the ODW-81, and the frequencies are set-in with decade switches on the OD-8 (also see description PSM-8).

Measuring the frequency

The frequency is detuned with the decade switches at the OD-8, and this causes the vertical bar on the screen to move to the position of interest. Now the frequency can be read at the decade switch.

Setting to a definite frequency

Set-in the chosen frequency on the decade switches at the OD-8. Then, put a reference trace at the frequency mark. This trace now corresponds to a definite frequency.

Also do the same with both of the other reference traces. By this means, the screen can be calibrated in the X direction.

3. Technological Instruction

3.2.2. Operating mode "normal"

When the mode switch on the SGR-21 is at "normal" a change in magnification at the Vertical Amplifier does not affect the positions of the reference traces. However, the coordinated absolute value of level is changed as well as the differential level between the traces.

The positions of the reference traces are also independent of a position shift ("Position") for the measuring trace. Therefore, between the traces, the differential level remains constant. Here, the only change is absolute value.

3.2.3. Operating mode "MAG. DEPEND"

In this position of the mode switch, the positions of the reference traces change on the screen when magnification is changed or position is shifted ("Position"). The absolute value of level and the differential level between the traces remain the same. Every trace, therefore, always marks the value of its calibration signal.

3.2.4. Calibrating with the SGM-21

For this, the Horizontal Amplifier SGH-21 and the Frequency-marker Plug-in SGM-21 are used (possibly also SGR-21, -22). Instead of the SGH-21, the Horizontal Amplifier SGH-22 or Frequency Discriminator SGD-21 are suitable.

Place SGH-21 in bay 8 b, SGM-21 in bay 8 a. Operating mode "external" selected at SGH-21.

The SGM-21 delivers two vertical reference traces and can present an external frequency mark of five different types:

Intensify or blank the measuring-trace, vertical bars, pulse onto measuring or else horizontal reference traces, (horizontal reference trace from SGR-21, pertinent push button depressed.

External frequency markers can be used to calibrate the screen. The frequency marks can be fed to the SGM-21 via the jack on the front panel or via the system cable.

Measuring the frequency:

The frequency at the Level Meter should be retuned until the marker is on the screen at the position to be measured. Then, the frequency can be read at the Level Meter.

Setting to a definite frequency:

Set the frequency at the Level Meter. Then, apply a reference trace onto the frequency mark. Continue process for other reference traces. Thus, the reference traces now mark definite values of frequency.

If two vertical reference traces of the SGM-21 are not sufficient, then, in addition, the SGR-22 can be used.

The reference traces from the SGM-21 are always MAG dependent.

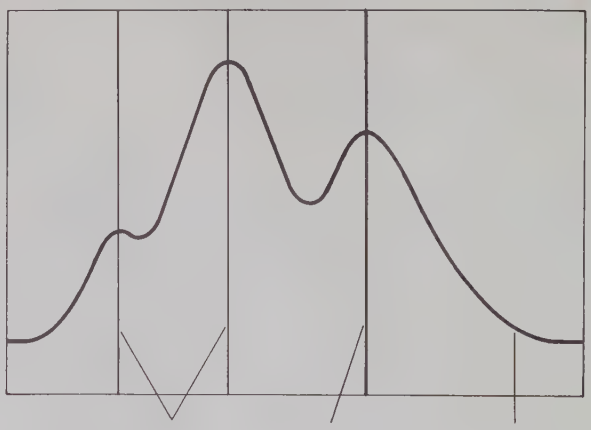


Fig. 3-2 Vertical reference traces | External frequency marks | Curve of measuring signal

Example: Vertical reference traces from SGM-21 for setting the frequency value of a measuring signal curve. The external frequency marker is switched to the vertical bar (switch at "I") and is prominently displayed (depressed push button)

3.2.5. Calibration with swept operation

The Frequency Discriminator SGD-21 and the Reference Trace Plug-in SGR-22 (or the Frequency Marker Plug-in SGM-21) are used.

Place SGD-21 in bay 8 b, SGR-22 in bay 8 a.
At the SGD-21, operating mode "intern 40 Hz" and chosen frequency range are selected. SGR-22 has slide switch set at "MAG. DEPEND"

Frequency Discriminator SGD-21 is connected to a Level Generator (coax. input on the front panel or else on the back panel of the main frame).
If the SGP-21 is to be used as a level meter, then it should be connected to the Level Generator because the SGP-21 provides internal signal-drive to the SGD-21.

Signal voltage of the lower corner frequency is fed in, and potentiometer "Pos" is used to shift the spot to the left edge of the screen. Apply a reference trace onto the spot.

Set the measuring signal of the Generator at the upper corner frequency and using the potentiometer MAG, the spot should be shifted to the right edge of the screen. Superimpose a reference trace onto the spot.

Possibly the settings need to be corrected with "Pos" and "MAG".

Therewith the screen is calibrated for the X direction and the set-in frequency range is magnified over the full screen width. Obviously also optional intermediate values can be set-in and calibrated.

For swept operation, switch-over to "external" deflection, and the measuring frequency from an a.c. voltage output of the Level Meter should be fed to the Frequency Discriminator.

4. DESIGN DETAILS AND CHARACTERISTICS

4. Applications and Characteristics

4.1. Main frame

4.1.1. Y deflection

The Display Unit operates according to the scanned line raster method. Herewith, the periodically blanked electron beam is deflected in a vertical direction at a raster frequency of 16 kHz. In a comparator, which is contained in the Y amplifier plug-in,the measuring voltage to be displayed is compared with the instantaneous raster voltage. If both signals are at equal amplitude, then the beam is intensified so that a spot appears on the screen. Thus, the presented curve is made up from a multiplicity of single spots.

The Y deflection generator delivers a sinusoidal current which flows through the Y deflection coil.

Due to the signal trace being formed on a flat screen instead of on a hemispherical surface, there is an error in linearity which is corrected with the Y linearizer.

This circuit is made up from a function generator for forming a Y deflection function. Thereby, the raster signal is equalized to correspond to the geometry of the screen.
A limiter provides the necessary constant amplitude,so the raster signal is limited at both edges to prevent exceeding the range.

4.1.2. X deflection

The X signal first is corrected at the X linearizing circuit. The corresponding equalized signal is fed to the X final amplifier where the necessary power is derived for driving the X deflection coil.

The "pin cushion" corrector equalizes the "pin cushion" distortion. By means of this correction, the amplitude of the raster signal is varied as a function of the X deflection excursion.

An internal generator having a fixed frequency of 40 Hz provides horizontal deflection if there is no X signal.

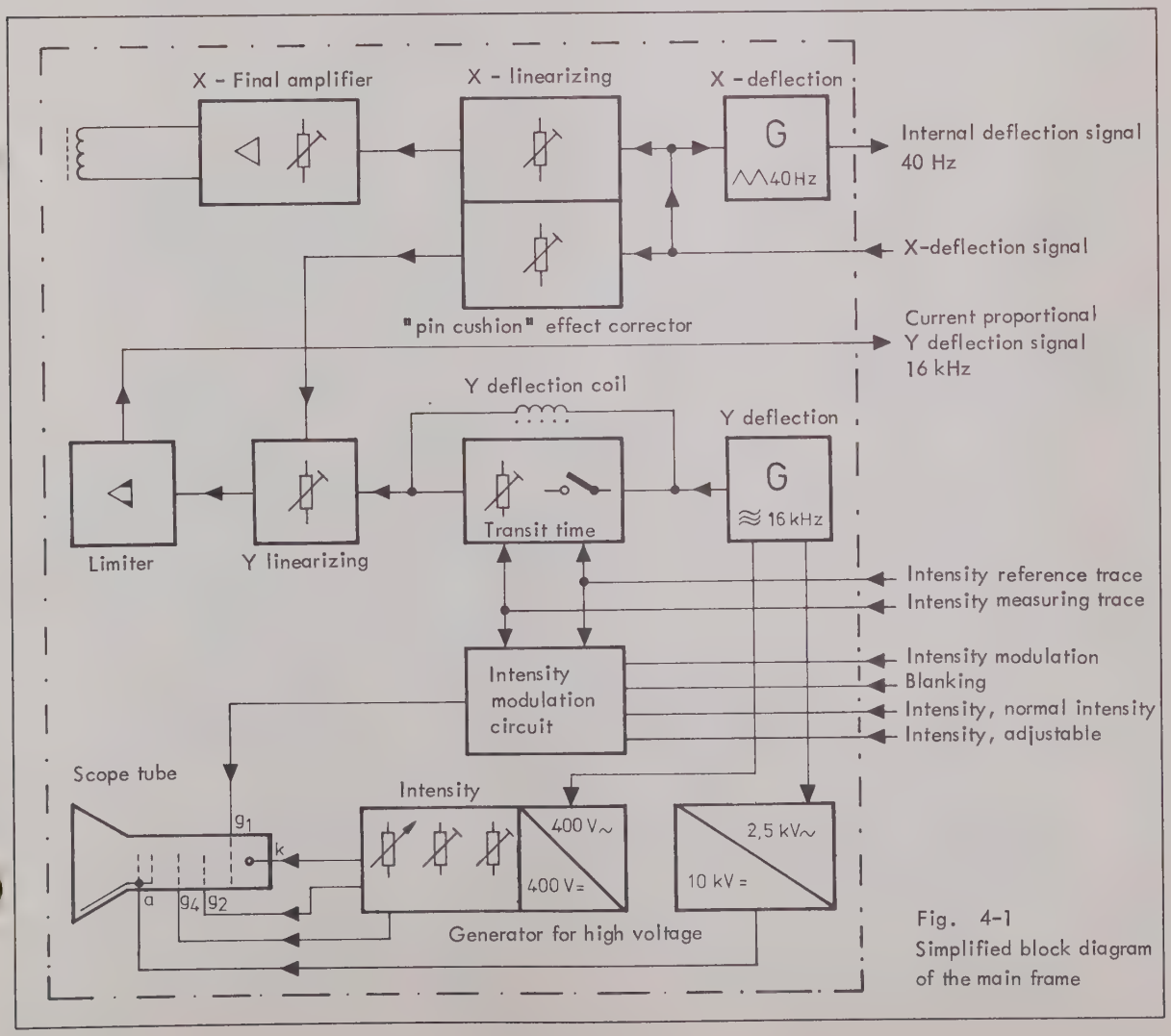


Fig. 4-1
Simplified block diagram of the main frame

4. Applications and Characteristics

4.2. Plug-in units

4.2.1. Vertical amplifier SGV-21

The SGV-21 compares the measuring signal to-be-presented with the Y deflection signal (raster frequency 16 kHz) coming from the main frame. When the voltages are equal, there is an intensifying pulse triggered at the time of the positive transition of the raster signal..

The measuring signal is fed to the vertical amplifier either via the unbalanced Y input on the front panel or via the system connector on the back panel of the main frame. The polarity is switchable so the Y signal can be presented either as normal or inverted on the screen (presentation of amplification or attenuation).

During the rise of the positive transition of the trapezoidal shaped raster signal, the comparator releases a positive signal when the measuring voltage and the transition voltage are at equal values. The positive signal is fed to a pulse shaper, the output of which is the intensifying pulse.

Added to the Y deflection signal is a d.c. voltage proportional to the Y shift which is controlled with potentiometer "Pos". Then, via the adjustment "MAG" and an amplifier, the Y deflection signal is fed to the comparator.

Additionally the "MAG" produces a d.c. voltage which adjusts the amplitude of the frequency mark coming from the SGM-21 so as to correspond with the Y magnification.
Simultaneously with changing-over polarity of the measuring signal, there also is change-over of polarity of the reference trace voltage from the SGR-21. And the indicator of the Level Meter has a correct reading.

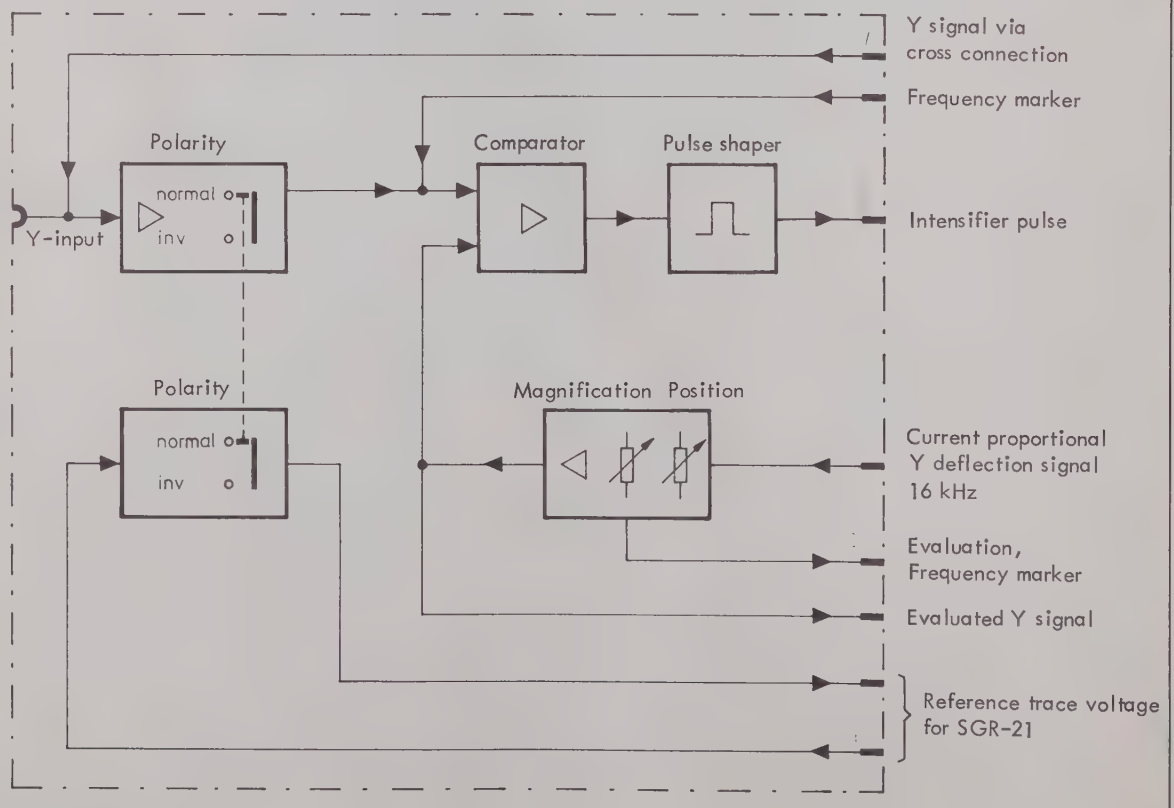


Fig. 4-2 Simplified Block diagram SGV-21

4.2.2. Vertical amplifier SGV-23

The SGV-23 has a high impedance balanced input. The input gain (sensitivity) can be adjusted in three steps. The "ZERO" push button is used to check the zero point. For this reason, the Y signal must be present at the input.

The Vertical Amplifier compares the to-be-presented measuring signal with the Y deflection signal (raster frequency 16 kHz) coming from the main frame. During the positive transition of the trapezoidal shaped raster signal, the comparator releases a positive signal when the two compared voltages are at equal amplitudes, and this signal passes through the pulse shaper, the output of which is an intensifying pulse.

Added to the Y deflection signal is a d.c. voltage proportional to the Y shift which is controlled with potentiometer "Pos." . Then, via the adjustment "MAG" and an amplifier, the Y deflection signal is fed to the comparator.
Additionally the "MAG" produces a d.c. voltage which adjusts the amplitude of the frequency mark coming from the SGM-21 so as to correspond with the Y magnification.

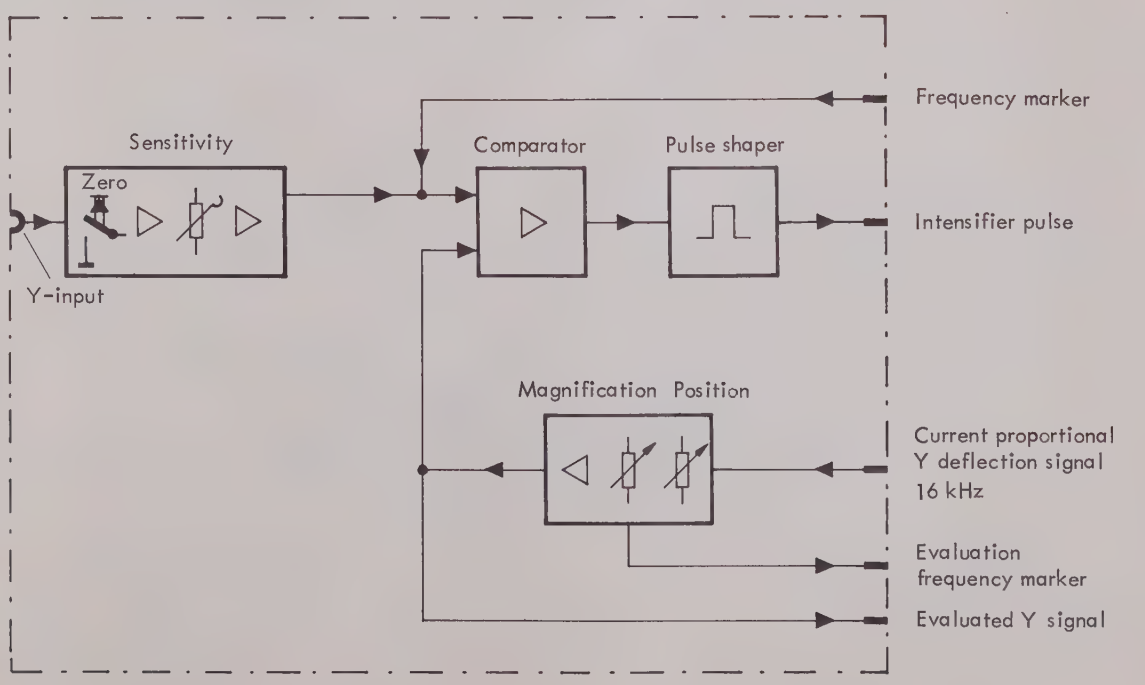


Fig. 4-3 Simplified Block Diagram SGV-23

4. Applications and Characteristics

4.2.3. Horizontal amplifier SGH-21

The X deflection signal can be fed to the SGH-21 via the unbalanced input on the front panel or else via the system connector on the back panel of the main frame. A normal or inverted presentation of the input signal is possible due to the polarity reversal switch.

There are two operating modes possible for the X deflection:

- deflection by means of an externally applied signal ("external")
- deflection by means of the 40 Hz fixed frequency internal triangular wave generator in the main frame ("intern"). Herewith, the measuring signal is presented according to the raster scan method in the X and Y directions.

Deflection by means of an external signal is, in principle, always possible. However, there are disadvantages with slow deflection rates (sweep period > 1 s) when Reference Trace Plug-in Units are used. The horizontal reference traces are visible only as slowly sweeping points, and the vertical reference traces are visible always only for short intervals.

These disadvantages can be prevented by means of the internal deflection because here the electron beam is deflected with the fixed frequency of 40 Hz. The reference traces, therefore, form a flicker-free electronic raster which is independent of the externally applied deflection voltage.

With the internal X deflection, the measuring signal is presented on the screen according to the raster scan method. Thus, a comparator compares the X signal with the internal deflection signal. If the instantaneous values coincide, then the comparator triggers an X intensifier pulse. The X intensifier pulse is applied to a NOR circuit which also has the Y intensifier pulse applied to it. The NOR output is fed to the intensifying circuit in the main frame.

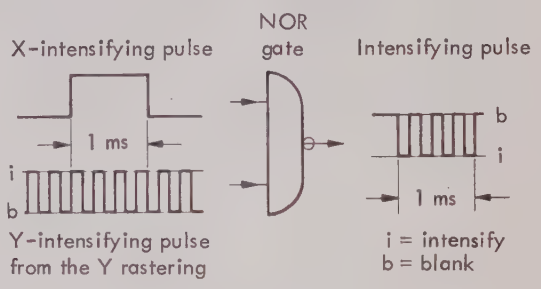


Fig. 4-4 Intensifying with internal X deflection

This method is suitable for very slow deflection rates; whereby, at higher rates, the point structure of the measuring curve is disturbed.

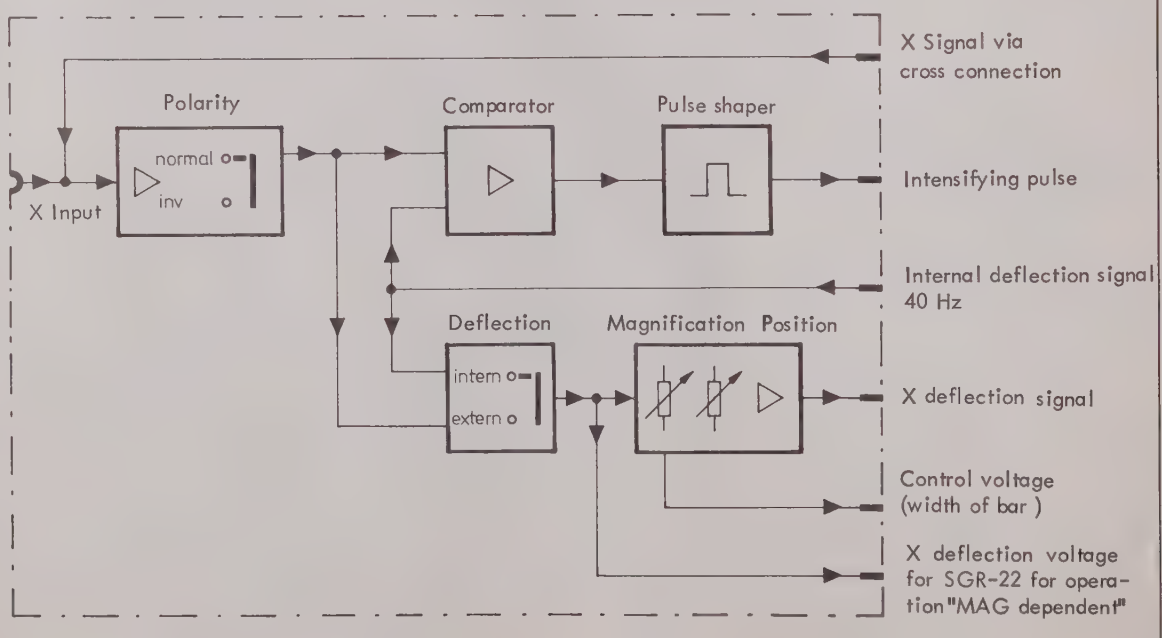


Fig. 4-5 Simplified block diagram SGH-21

4.2.4. Horizontal amplifier SGH-22

The SGH-22 has a balanced high impedance input. Input sensitivity is adjustable in three steps. The "ZERO" push button enables checking the zero point when a test specimen is connected.

Potentiometer "MAG" enables the X signal gain to be increased by a factor of 10. For shifting in a horizontal direction the screen image, potentiometer "Pos" is used to add to the X signal a d.c. voltage which is proportional to the X shift.

There are two operating modes possible for the X deflection :

- deflection by means of an externally applied signal ("external")
- deflection by means of the 40 Hz fixed frequency internal triangular wave generator in the main frame ("intern"). Herewith, the measuring signal is presented according to the raster scan method in the X and Y directions.

Deflection by means of an external signal is, in principle always possible. However, there are disadvantages with slow deflection rates (sweep period >1 s) when Reference Trace Plug-in Units are used. The horizontal reference traces are visible only as slowly sweeping points, and the vertical reference traces are visible always only for short intervals.

These disadvantages can be prevented by means of the internal deflection because here the electron beam is deflected with the fixed frequency of 40 Hz. The reference traces, therefore, form a flicker-free electronic raster which is independent of the externally applied deflection voltage.

With the internal X deflection, the measuring signal is presented on the screen according to the raster scan method. Thus, a comparator compares the X signal with the internal deflection signal. If the instantaneous values coincide, then the comparator triggers an X intensifier pulse.

The X intensifier pulse is applied to a NOR circuit which also has the Y intensifier pulse applied to it. The NOR output is fed to the intensifying circuit in the main frame.

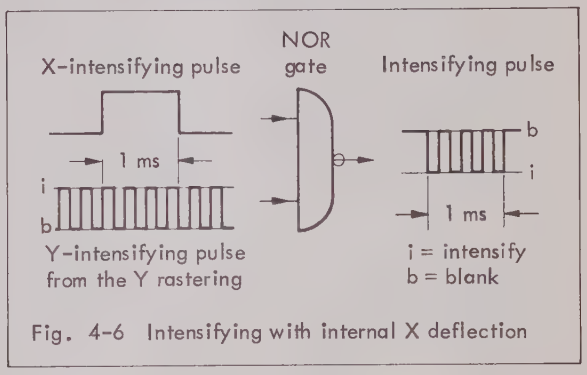


Fig. 4-6 Intensifying with internal X deflection

This method is suitable for very slow deflection rates; whereby at higher rates, the point structure of the measuring curve is disturbed.

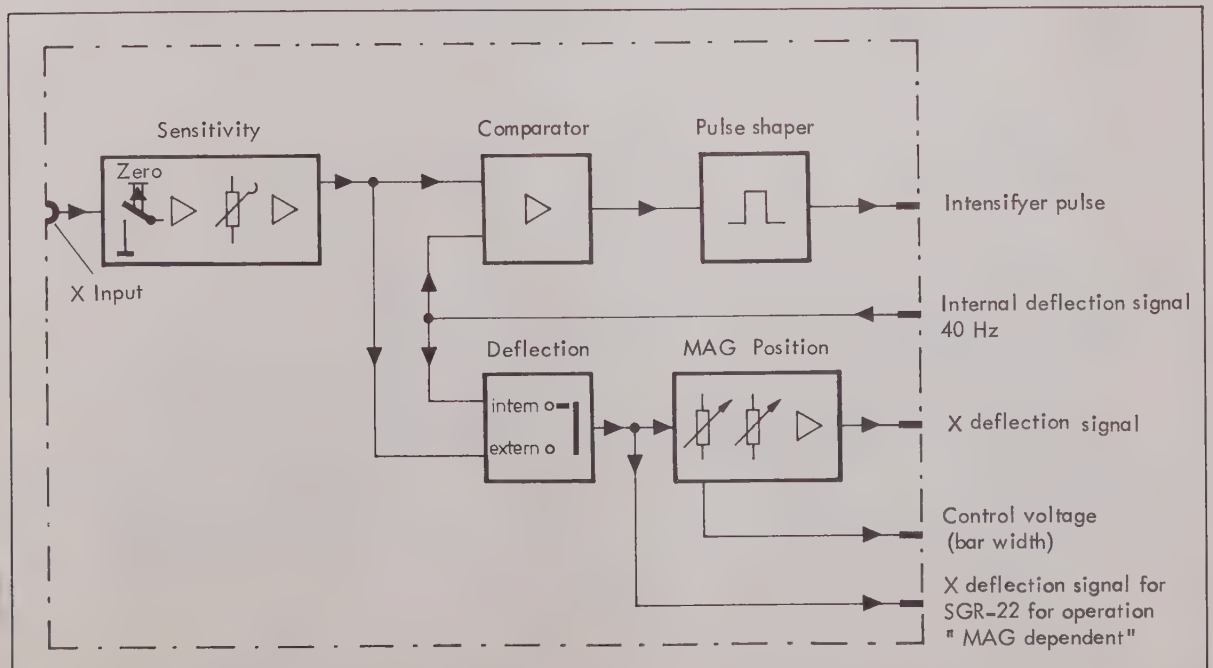


Fig. 4-7 Simplified block diagram SGH-22

4.2.5. Horizontal reference traces SGR-21

The SGR-21 produces three horizontal reference traces which have adjustable positions on the screen.

The Y deflection signal after having been weighted by magnification in the vertical amplifier is then rectified. In the operating mode "normal", the signal is fed to the potentiometers for shifting the position. In the operating mode "MAG. DEPEND.", however, a fixed adjusted d.c. voltage is used. At the potentiometers, now one of the three reference traces can be shifted in the Y direction because a d.c. voltage proportional to the reference trace is transferred to the comparator where it is compared to the weighted Y signal. If the two voltages are equal, then the comparator produces a pulse which intensifies the electron beam.

The width of the intensifiying pulse and thereby the intensity of the electron beam can be adjusted by means of the potentiometer "KONTRAST". If a push button is depressed, then for that particular reference trace, the potentiometer "KONTRAST" is inoperable. That trace has a higher intensity than both of the others because it has been subjected to the wider intensifying pulse.

Simultaneously, the control voltage of the prominently intensified trace is switched to the indicator of the Level Meter where the value of reference trace voltage now can be read.

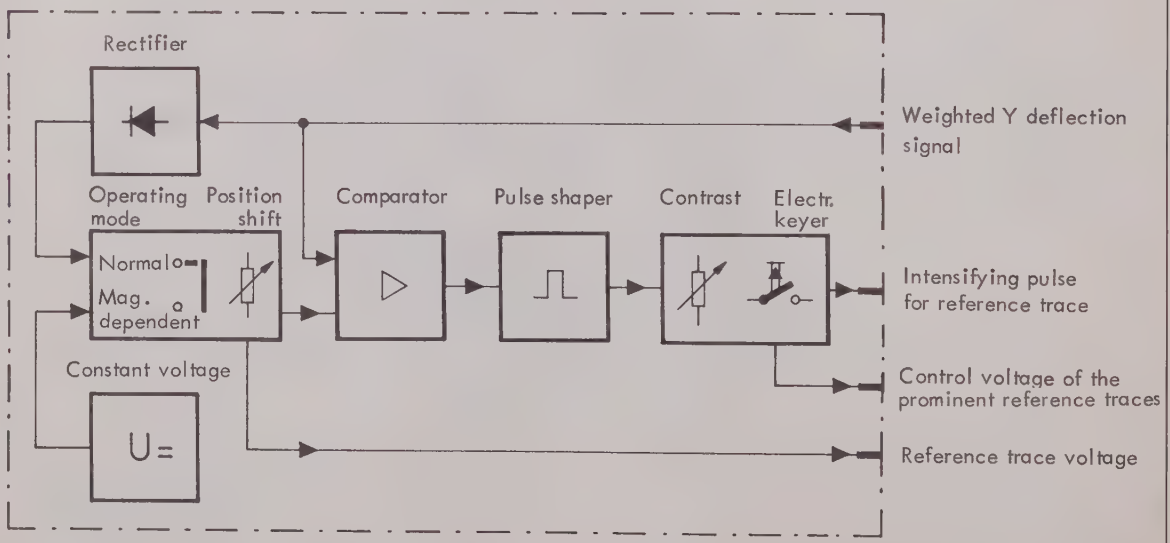


Fig. 4-8 Simplified block diagram SGR-21

4.2.6. Vertical reference traces SGR-22

The SGR-22 produces three vertical reference traces which have adjustable positions on the screen. Additionally an external frequency marker can be presented as a vertical bar.

By means of the raster scan method the electron beam is continuously deflected up and down in a vertical direction. The intensity modulated beam traces a vertical line on the screen or with simultaneous X deflection a more or less wider bar. The width of the bar is dependent on the ratio of intensity pulse period to the sweep period of the X signal.

The X deflection signal is fed to a window amplifier (comparator). The window width is 5 % of the image width. During the interval that the X deflection signal is passing through the window range, the electron beam is intensified. The window can be shifted by means of an adjustable voltage over the complete image width (potentiometer for shifting the position).

Accordingly, there is coordination of the reference trace with a fixed value of the X input signal. This coordination remains the same in the operating mode "MAG DEPENDENT" as well as with variation of "MAG" and "Pos".

Proportional to magnification, the window range must be reduced in order to hold constant the width of the bar.

The necessary control voltages is provided by the horizontal amplifier.

The intensity of the reference traces can be adjusted with potentiometer "KONTRAST". Every reference line is related to an identifying push button. If one of these push buttons is depressed, the related line appears brighter than the other two. Moreover, the intensifying pulse is fed out to the system connector of the main frame. In connection with a suitable sweep generator (e.g. OPW-7), these lines indicate frequencies which can be measured.

If the Display Unit operates with internal deflection, then the vertical reference traces can be derived from the internal deflection voltage and together with the horizontal trace, an electronic raster is formed. In this operating mode, the internal deflection signal and the external X signal coincide only in discrete spots. The reference traces intensifying pulses, accordingly, can not be coordinated to any definite instantaneous value of the X input signal. Therefore, an external evaluation also is not worthwhile. For this reason, with internal deflection, an electronic switch interrupts the connection to the system connector.

The SGR-22 can present an external frequency marker as a vertical bar in addition to the three vertical reference traces. Thereto, the Plug-in for Frequency Markers feeds in pulses via the system connector of the main frame.

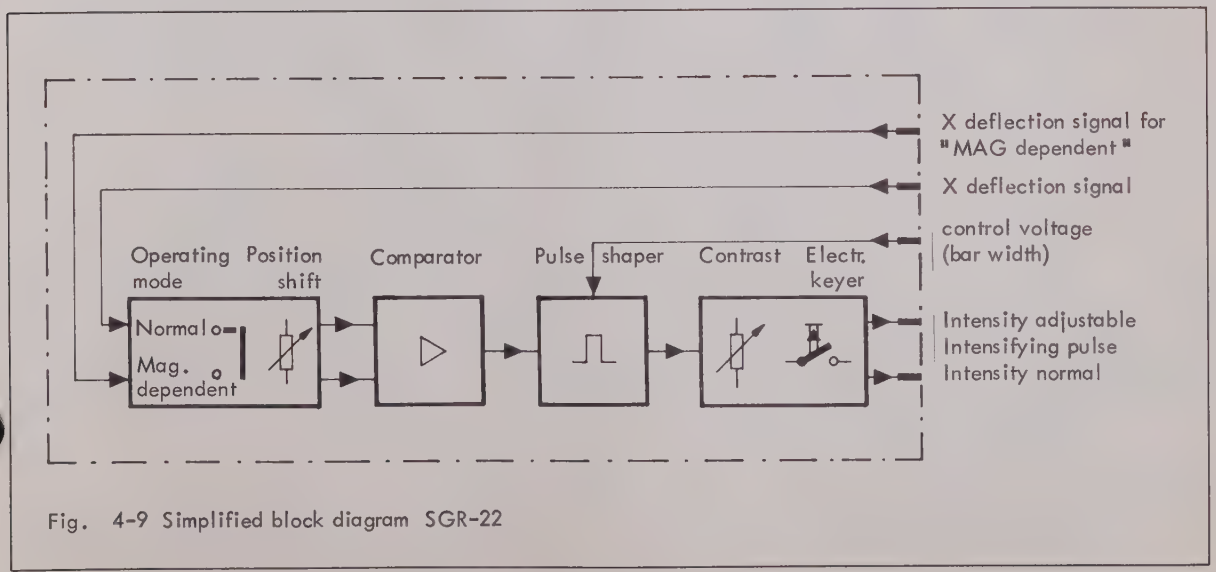


Fig. 4-9 Simplified block diagram SGR-22

4.2.7. Frequency markers SGM-21

The SGM-21 produces two vertical reference traces and can present an external frequency mark of five different types.

The X deflection signal is fed to a window amplifier (comparator). The window width is 5 % of the image width. During the interval that the X deflection signal is passing through the window range, the electron beam is intensified. The window can be shifted by means of an adjustable voltage over the complete image width (potentiometer for shifting the position).

Accordingly there is coordination of the reference trace with a fixed value of the X input signal. This coordination remains the same in the operating mode "MAG DEPENDENT" as well as with variation of "MAG" and "Pos".

Proportional to magnification, the window range must be reduced in order to hold constant the width of the bar. The necessary control voltage is provided by the horizontal amplifier.

The intensity of the reference traces can be adjusted with potentiometer "KONTRAST". Every reference line is related to an identifying push button. If one of these push buttons is depressed, the related line appears brighter than the other two. Moreover, the intensifying pulse is fed out to the system connector of the main frame. In connection with a suitable sweep generator (e.g. OPW-7), these lines indicate frequencies which can be measured.

If the Display Unit operates with internal deflection, then the vertical reference traces can be derived from the internal deflection voltage and together with the horizontal traces, an electronic raster is formed. In this operating mode, the internal deflection signal and the external X signal coincide only in discrete spots. The reference traces intensifying pulses, accordingly, can not be coordinated to any definite instantaneous value of the X input signal. Therefore, an external evaluation also is not worthwhile. For this reason, with internal deflection, an electronic switch interrupts the connection to the system connector.

The frequency marker pulses are fed-in via the balanced input on the front panel or via the system connector. The input accepts pulse amplitudes of 1 V to 10 V with optional polarity.

Presentation of an external frequency mark :

- Intensifying or blanking the measuring trace
- Vertical bar (intensity controllable with "KONTRAST" or identifying push button)
- Frequency mark added as pulse onto the measuring trace (when the Y magnification is used, the height of the mark remains constant).
- Frequency mark added as pulse onto the intensified horizontal reference trace.

With internal deflection, the frequency marks can be only presented by means of intensifying or blanking or addition to the measuring trace. The other presentations do not permit unambiguous marking.

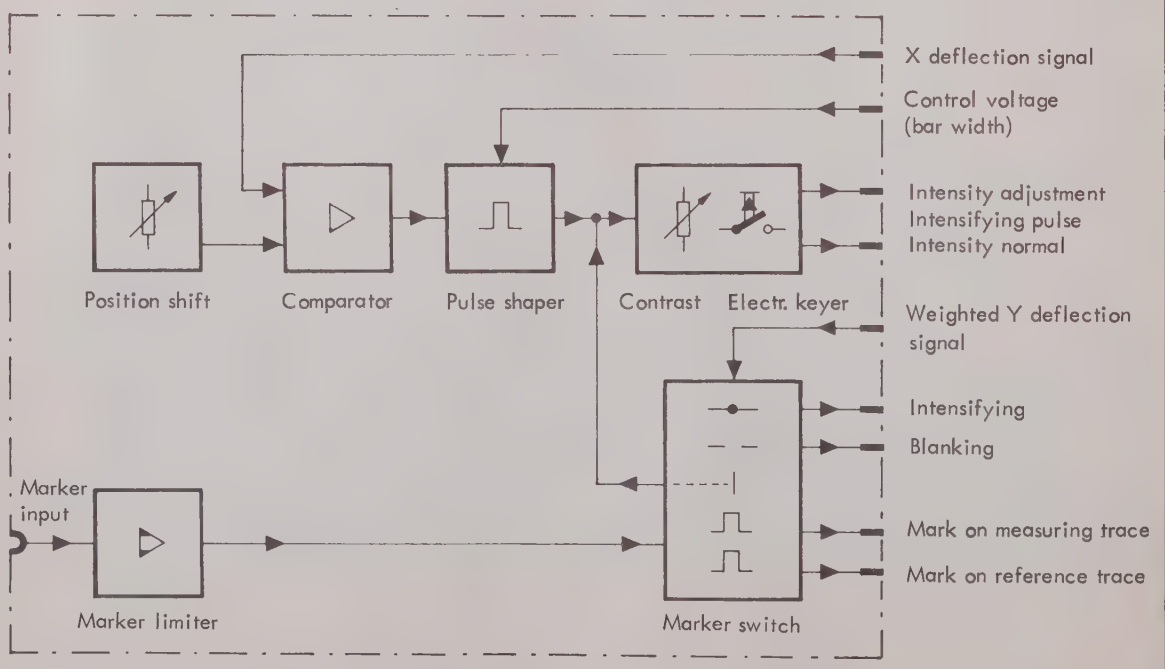


Fig. 4-10 Simplified block diagram SGM-21

4.2.8. Logarithmic IF amplifier SGV-22

The signal from the IF filter of the PM-8 is amplified, demodulated and logarithmized. Two possibilities exist for presentation, logarithmic or linear representation on the screen. Additionally, the indication of the PM-8 can be switched-over between "fast" and "slow".

The SGV-22 compares the to-be-presented measuring signal with the Y deflection signal (raster frequency 16 kHz)

During the positive transition of the trapezoidal shaped raster signal, the comparator provides a positive signal when the measuring signal voltage equals the instantaneous transition voltage. This positive signal causes the pulse shaper to put out an intensifying pulse.

The current proportional Y deflection signal has added to it a d.c. voltage proportional to the Y shift controlled with the potentiometer "Pos". Via the adjustment "MAG" and an amplifier, the Y deflection signal is fed to the comparator.

The magnification produces, in addition, a d.c. voltage which adjusts the amplitude of the frequency marker corresponding to the Y magnification.

Simultaneously with change-over of the measuring signal there is change-over of the polarity of the reference trace voltage. Thus, the panel meter reads correctly on the Level Meter.

The SGV-22 has a delogarithmizer which permits the measuring trace to be measured by means of the horizontal reference traces of the SGR-21. For this purpose, the SGR-21, after the proper push button is depressed, provides a corresponding reference trace voltage to the SGV-22. The vertical amplifier then weights this voltage in a way which causes the alternating voltage fed to the PM-8 to have a corresponding level between 0 dB and - 100 dB at 10 kHz. The level is indicated on the panel meter of the PM-8. If no push button is depressed on the SGR-21, than the voltage of the measuring trace is applied to the panel meter.

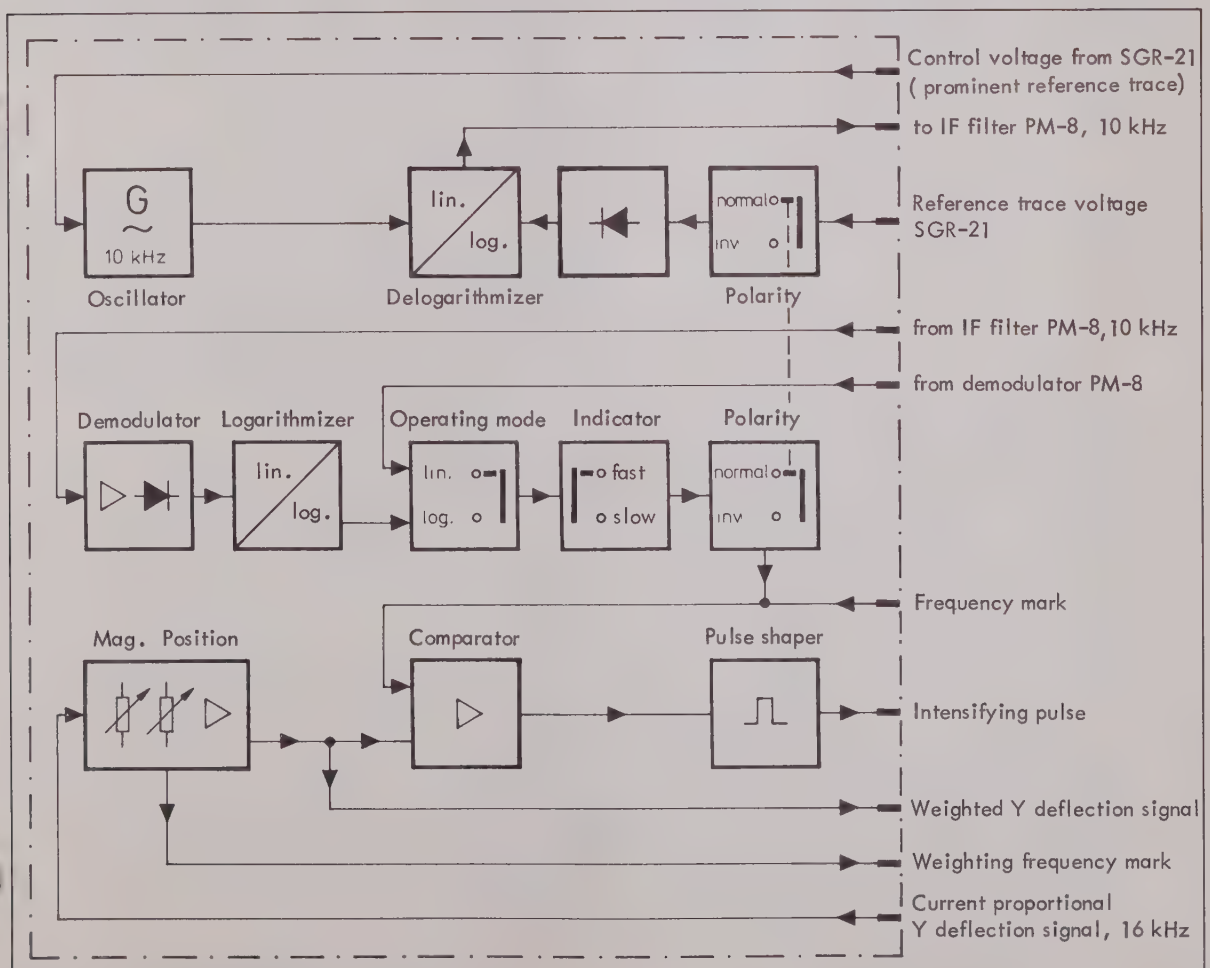


Fig. 4-11 Simplified block diagram SGV-22

4. Applications and Characteristics

4.2.9. Frequency discriminator SGD-21

When end-to-end swept measurements are made, the discriminator at the receive end converts the send frequency into a proportional d.c. voltage. This d.c. then is used as drive voltage for the horizontal final stage in the main frame.

The Plug-in Unit obtains the input signal either via an input connector on the front panel or else via a parallel input on the back panel of the main frame. Then, the input signal is fed to two separate discriminator channels. As a result of having such a large dynamic range of the auto. control amplifier, the input level may be from 0 dB to - 40 dB.

For each period of the input signal, the discriminator provides one current pulse. The mean value of the pulse is proportional to the input frequency. At the same time, the mean value forms a low pass filter of the 5 degree. Due to the steep slope of the attenuation curve, the limit frequency is very close to the lower limit of range, therefore, the transit time is sufficiently short.

The frequency range switch divides the complete range into 3 parts. Portions of any partial range can be selected by means of "MAG" and "Pos" in the X amplifier.

With X deflection there are two operating modes available:

- Deflection by means of an externally applied signal ("ext").
- Deflection by means of a fixed frequency of 40 Hz ("intern 40 Hz"). Herewith, the measuring signal is formed in the X and Y directions displayed according to the line-scan method.

Deflection by means of an external signal is, in principle always possible. However, there are disadvantages with slow deflection rates (sweep period > 1 s) when Reference Trace Plug-in Units are used. The horizontal reference traces are visible only as slowly sweeping points, and the vertical reference traces are visible always only for short intervals.

These disadvantages can be prevented by means of the internal deflection because here the electron beam is deflected with the fixed frequency of 40 Hz. The reference traces, therefore, form a flicker-free electronic raster which is independent of the externally applied deflection voltage.

For blanking the scan, there is a differentiator circuit which derives a pulse from the signal negative going transition. This then forms the blanking signal's for the return trace of the electron beam.

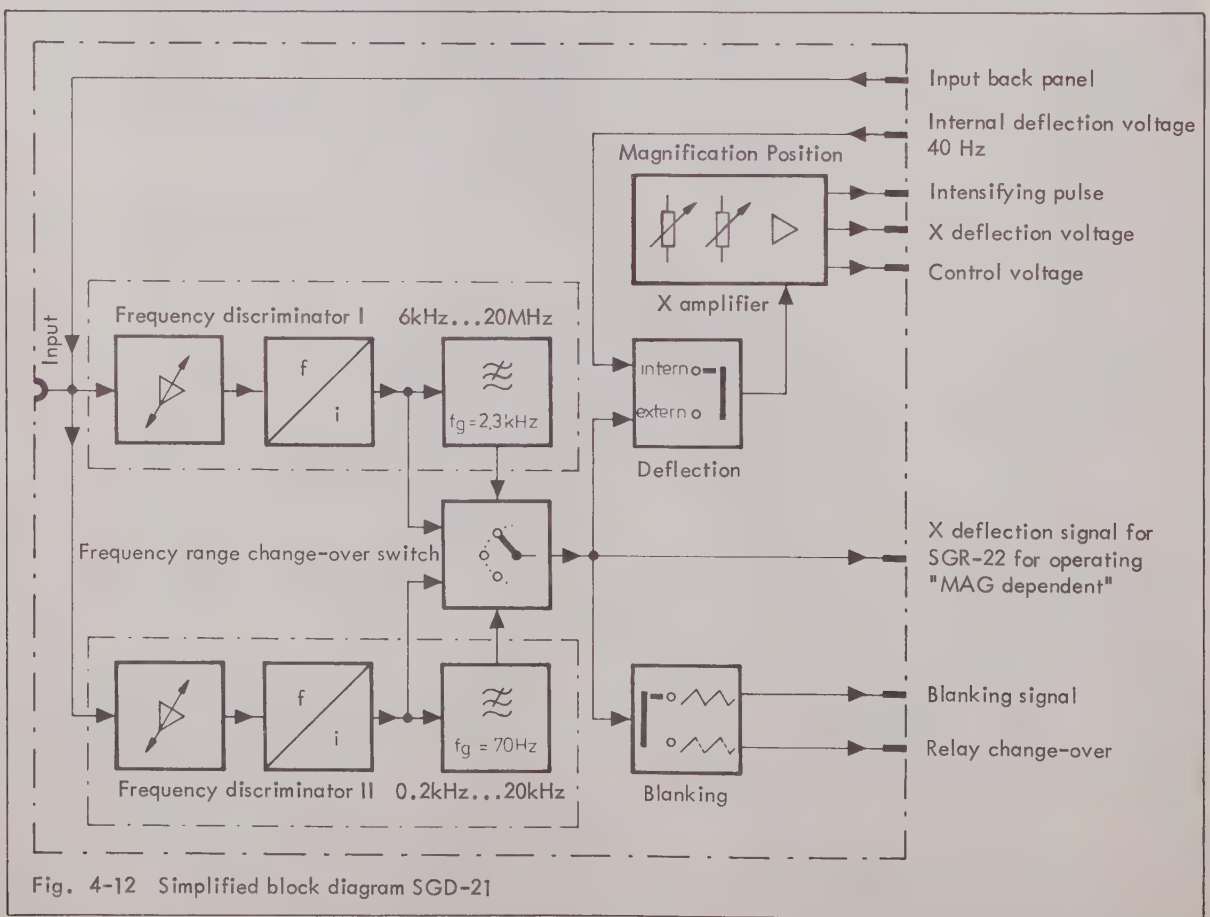


Fig. 4-12 Simplified block diagram SGD-21

4.2.10. Wideband level measuring amplifier SGP-21

The measuring signal can be fed into the SGP via either the balanced or the unbalanced input. The input impedance is switchable.

The amplified signal is fed via an internal cross-connection to the Frequency Discriminator SGD-21. If the SGP-21 and the SGD-21 are used in combination, then the input signal may only be fed in via the SGP-21.

After demodulation, the signal is logarithmized, and in the comparator, it is compared with the weighted Y deflection signal.

During the positive transition of the trapezoidal shaped raster signal, the comparator provides a positive signal when the measuring signal voltage equals the instantaneous transition voltage. This positive signal causes the pulse shaper to put out an intensifying pulse.

The current proportional Y deflection signal has added to it a d.c. voltage proportional to the Y shift controlled with the potentiometer "Pos". The potentiometer "MAG" is used for setting the ± 2 dB traces on the scope screen.

The SGP-21 has an internal calibration source. The current proportional Y deflection signal controls an electronic switch which keys the calibration voltage at a definite relationship.

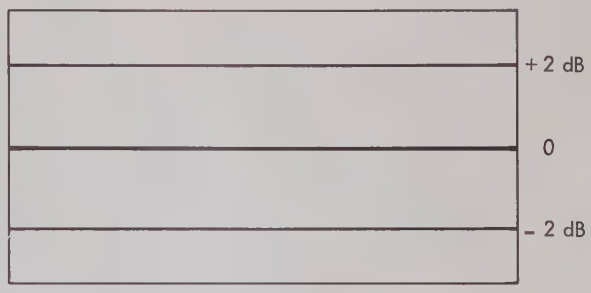


Fig. 4-13 Calibration traces

If the calibration push button is depressed, then three traces appear (with disappearance of X deflection, three spots) on the scope screen : + 2 dB, 0 dB and - 2 dB, Calibration traces + 2 dB and - 2 dB can be shifted by means of "MAG" to any optional position on the screen.

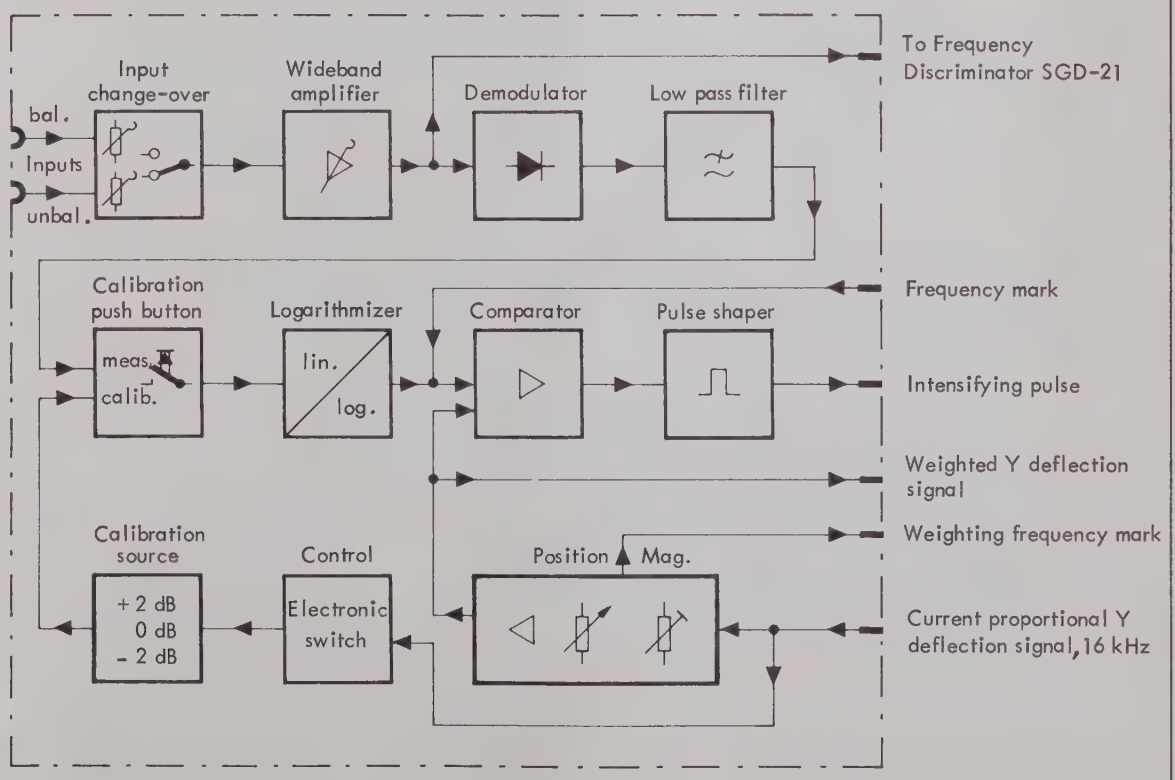


Fig. 4-14 Simplified block diagram SGP-21

5. MAINTENANCE AND GENERAL INFORMATION

5. Maintenance and General Information

Attention : If equipment is opened for maintenance, first the a.c. power plug should be disconnected.

5.1. Mechanical arrangement

The dimensions of the equipments correspond to the American standard "ASA C 83.9 Rack and Front Panels" (or DIN-Norm 41 494). Therewith, the equipments are suitable for mounting in 19" racks, and only the front panel dimensions must be changed by means of changing the side pieces of the frame around the case. Cover, bottom, back panel and side panels are fabricated from plastic covered sheet aluminum. After removal of the relevant screws at the corners of the back panel any panel can be pulled out back wards.

Thereupon, the switches and circuit elements are easily accessible.

5.1.1. Preventative maintenance on switches

For preventing unnecessary mechanical wear on the stepping switches, special grease for switches should be applied at regularly scheduled intervals.

5.1.2. Mounting in a 19" rack

First the two side panels must be removed. Then the side pieces of the case frame are removed after unscrewing the two screws for each side piece. The side pieces are replaced with one set of 19" mounting angles, order number BN 556/4
The foot pieces and guide studs can be detached after removing the cover and bottom panel. The cover, bottom and side panels thus have been prepared for remounting.

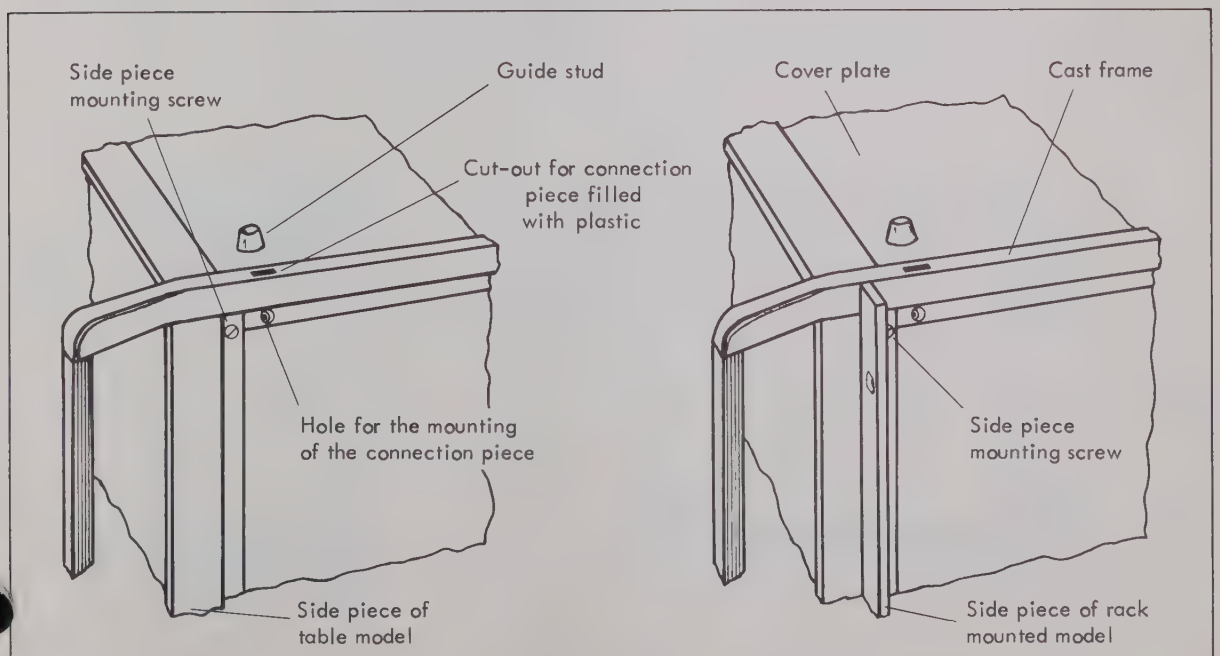

Side piece mounting screw
Guide stud
Cut-out for connection piece filled with plastic
Hole for the mounting of the connection piece
Side piece of table model
Cover plate
Cast frame
Side piece mounting screw
Side piece of rack mounted model

Fig. 5-1 Modification of the bench model for 19" rack mounting

5. Maintenance and General Information

5.1.3. Joining of several instruments

The new cabinet conception allows the mounting of several instruments one above the other. These instruments are firmly mounted together by means of special connection pieces with the order number 00.0400.06/5.

To do this, it is necessary to remove the top panel of the lower instrument and the lower panel of the upper instrument as well as the side panels of both. The small plastic pieces in the frame cut-outs are now pushed out. This is valid both for the four cut-outs of the upper frame and the four cut-outs of the lower frame.

The four connection pieces are placed into the cut-outs of the lower instrument as shown in Fig. 5-2 and are screwed firmly into place. After removing the guide studs from the cover and the foot pieces from the lower panel, both panels should be replaced.

The instruments are now placed one above the other so that the connection pieces mounted in the frame of the lower instrument pass through the frame cut-outs of the upper instrument. After firmly screwing the upper instrument to the connection pieces, the side panels should be replaced.

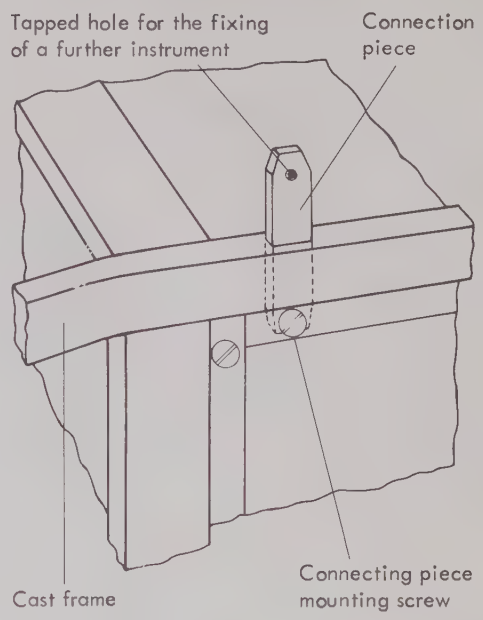


Fig. 5-2

5.1.4. Transportation instructions

Safe transportation of the measuring instrument can only be guaranteed if an adequate packing is used. If the original packing has been discarded, the instrument should only be packed as shown in the following drawing. Fig. 5-3.

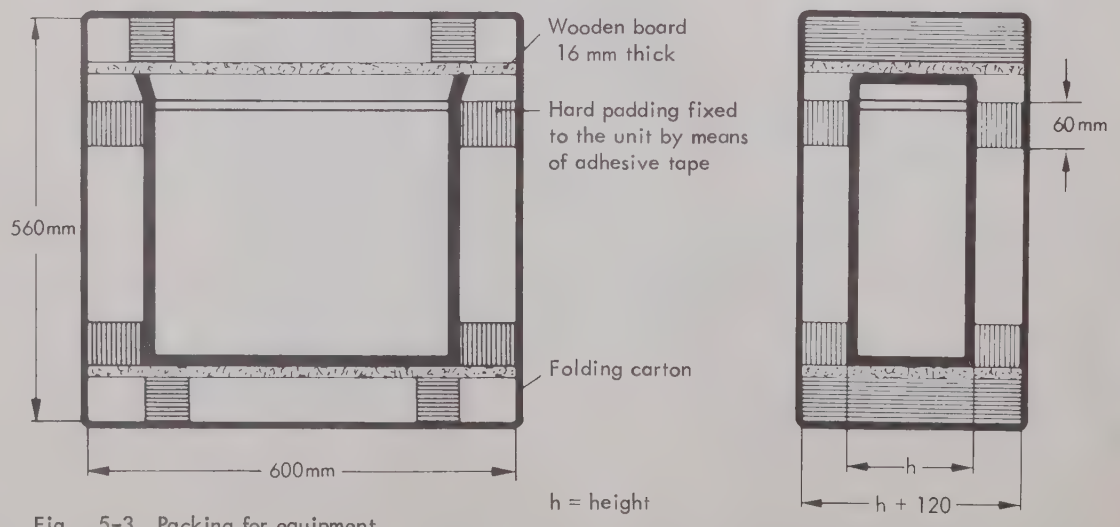


Fig. 5-3 Packing for equipment

5. Maintenance and General Information

5.2. Graticules

Graticules are illustrated in scale 1 : 1.

The graticule lines are scribed on the back surface of the transparency.

Graticule for general applications

Division: x = 14
y = 10

Order number SGS-201

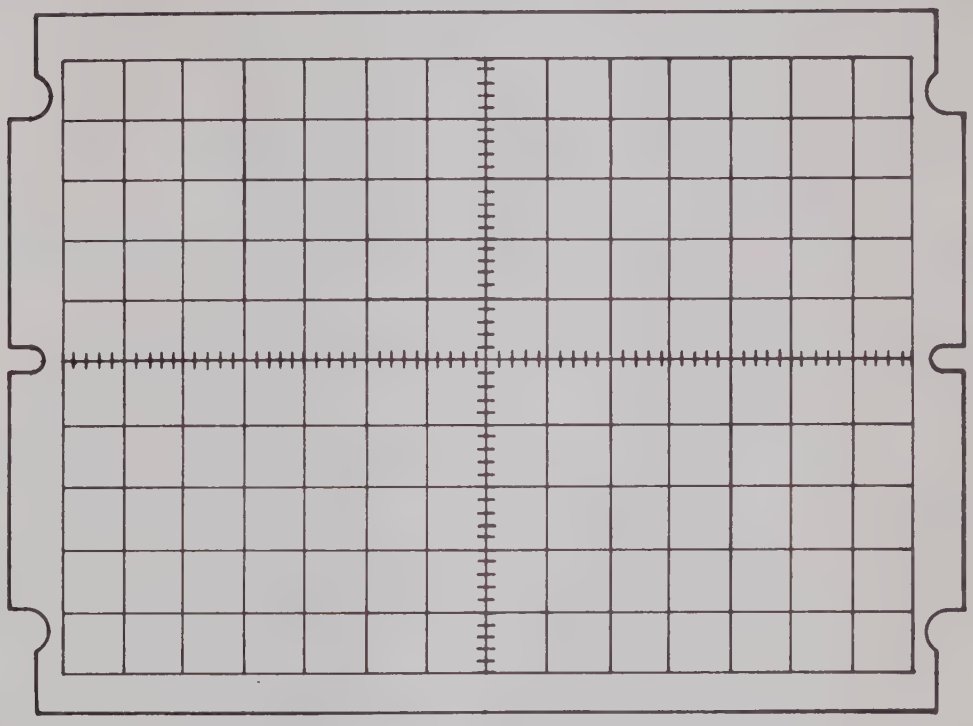


Fig. 5-4

Graticule for general applications

Divisions: x = 10
y = 10

Order number SGS-202

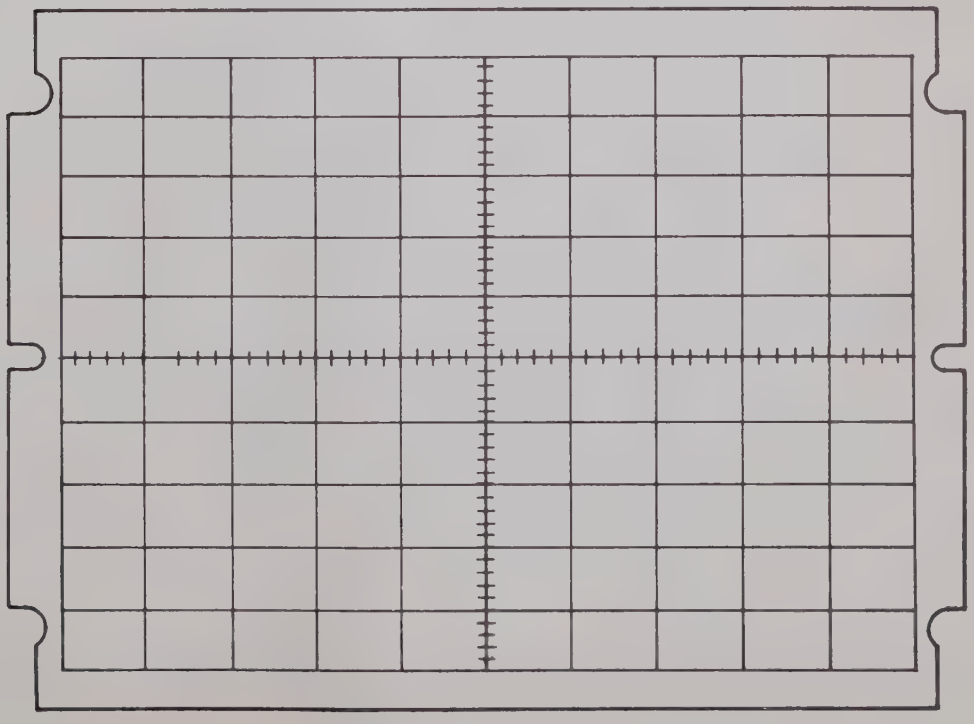


Fig. 5-5

Graticule
for Measuring
Setups
PSM-4, -5, -7, -8

Divisions: X = 10
Y_1 = 12
Y_2 = 6 dB
Y_3 = 20 dB

Order number
SGS-203

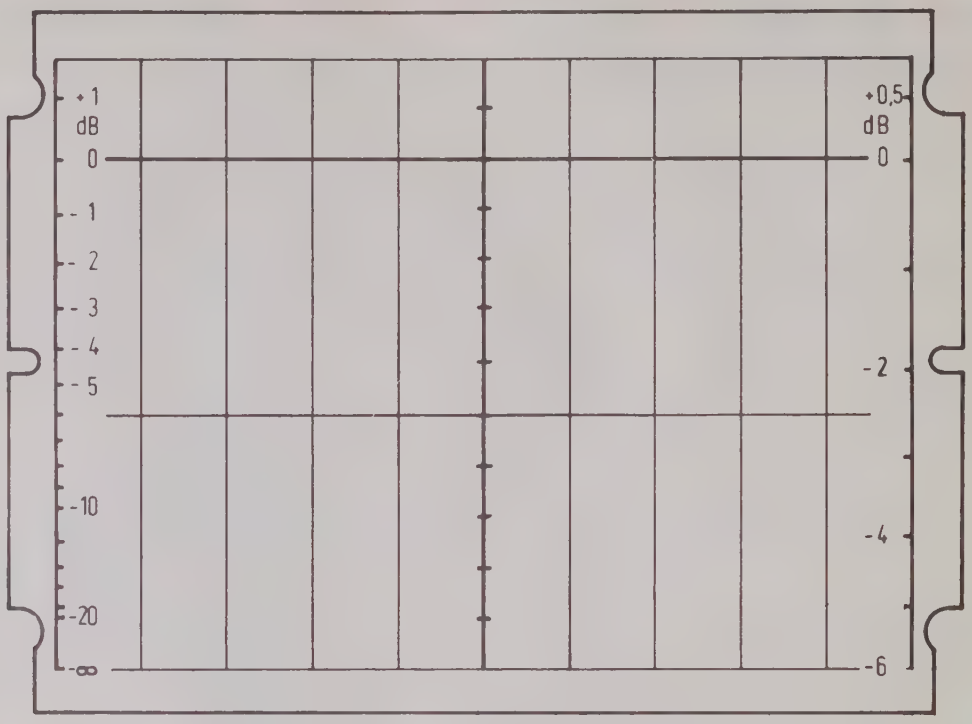


Fig. 5-6

Graticule
for SGP-21

Divisions: X_1 = 7
X_2 = 14
Y_1 = 10
Y_2 = ± 5 dB

Order number
SGS-204

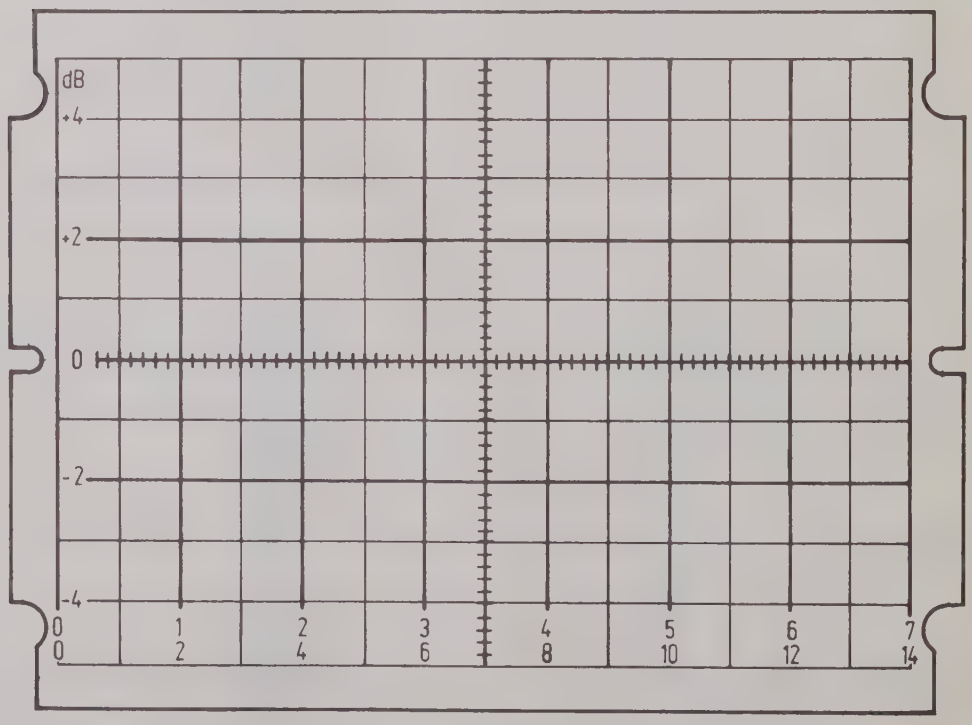


Fig. 5-7

5.2.1. Exchanging graticules

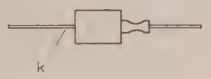
Remove front panel cover. Thereupon, mounting plate can be unscrewed. Remove graticule and place new graticule on CRT. Replace and fasten mounting plate, and refasten front panel cover.

APPENDIX

Dioden (Diodes)

1 N 4448, BAY 71, BAY 72, BAY 90, FD 300, ZPD 2,7, ZPD 3,3, ZPD 3,9, ZPD 5,1 rt, ZPD 6,2, ZPD 5,6, ZPD 6,8, ZPD 7,5, ZPD 8,2, ZPD 12, ZPD 33, HP 5082-2800, HP 5082-2835

VB 60

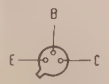


ZD 6,2

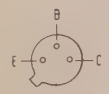
ZE 1,5
ZE 2

Alle nicht bezeichneten Dioden
(all undesignated diodes): 1 N 4448

Transistoren (Transistors)

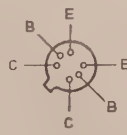


2 N 2219, 2 N 3251, 2 N 3947, BFX 48, BFX 49, BFX 93, BCY 59 D, BCY 72, BCY 78 D, BSX 88, BSX 93, BSY 79, DW 7154,

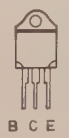


2 N 2905, 2 N 3729, BFY 82, BFY 94, BSY 54, 40 392, 40 394

BFR 99
BFY 90
BFR 37



BFY 81
BFY 84



TIP 33 A

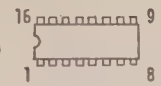
2 N 4221

2 N 5518
2 N 5519

2 N 3055

Integrierte Schaltkreise (Integrated circuits)

Draufsicht (Top view)



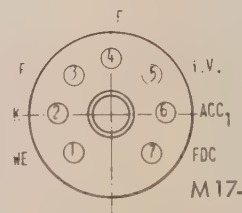
CD 4001 A

CD 4027 A

µA 709 C
µA 710
µA 741 C LM 311
µA 748 C LM 311 H

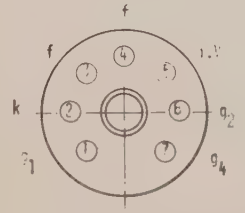
µA 715 C

Röhren (Tubes)



M 17-11 GM

SG-2



M 28-12 GM

SG-3

Äquivalenzliste für Transistoren (Transistor equivalents)

2 N Typ/äquivalente Proelektron Bezeichnung
2 N Type/äquivalent Proelektron designation

2 N 708 / BSX 88	2 N 2222 / BFX 95
2 N 918 / BFX 73	2 N 2368 / BSX 92
2 N 930 / BFX 93	2 N 2369 / BSX 93
2 N 1613 / BFX 69	2 N 2484 / BFX 93 A
2 N 1893 / BFW 33	2 N 3964 / BFW 22
2 N 2219 / BFX 97	

Sollten die Werte bestimmter Bauelemente in den Stromlaufplänen und Schaltteillisten differieren, so sind stets die Angaben in den Schaltteillisten als verbindlich anzusehen.

If the values of individual components listed in the circuit diagrams and component lists should differ from another, those values given in the component lists are valid.

Abkürzungsbeispiele (Abbreviations examples):

429 (3)	= Stromlaufplan 3	(Circuit diagram 3)
429-J	= Leiterplatte J	(Circuit board J)
Pkt. 6	= Anschlußpunkt 6	(Connection point 6)
TP 401	= Testpunkt 401	(Test point 401)
1), 2)...	= Anmerkungen	(Notes)

Farbkennzeichnung (Colour coding)

bl	blau	blue
blank	blank	bare wire
br	braun	brown
fl	farblos	transparent
ge	gelb	yellow
gn	grün	green
gr	grau	grey
rs	rosa	pink
rt	rot	red
Schirm	Schirm	screening
sw	schwarz	black
vio	violett	violet
ws	weiß	white
grrt	grau/rot	grey/red

geschirmte Leitung	Screened lead
blanker Draht	Bare wire

Belastbarkeit der Widerstände oder Größenbezeichnung nach DIN 44 050 ff

Resistor ratings or size corresponding to German Standard DIN 44 050 ff

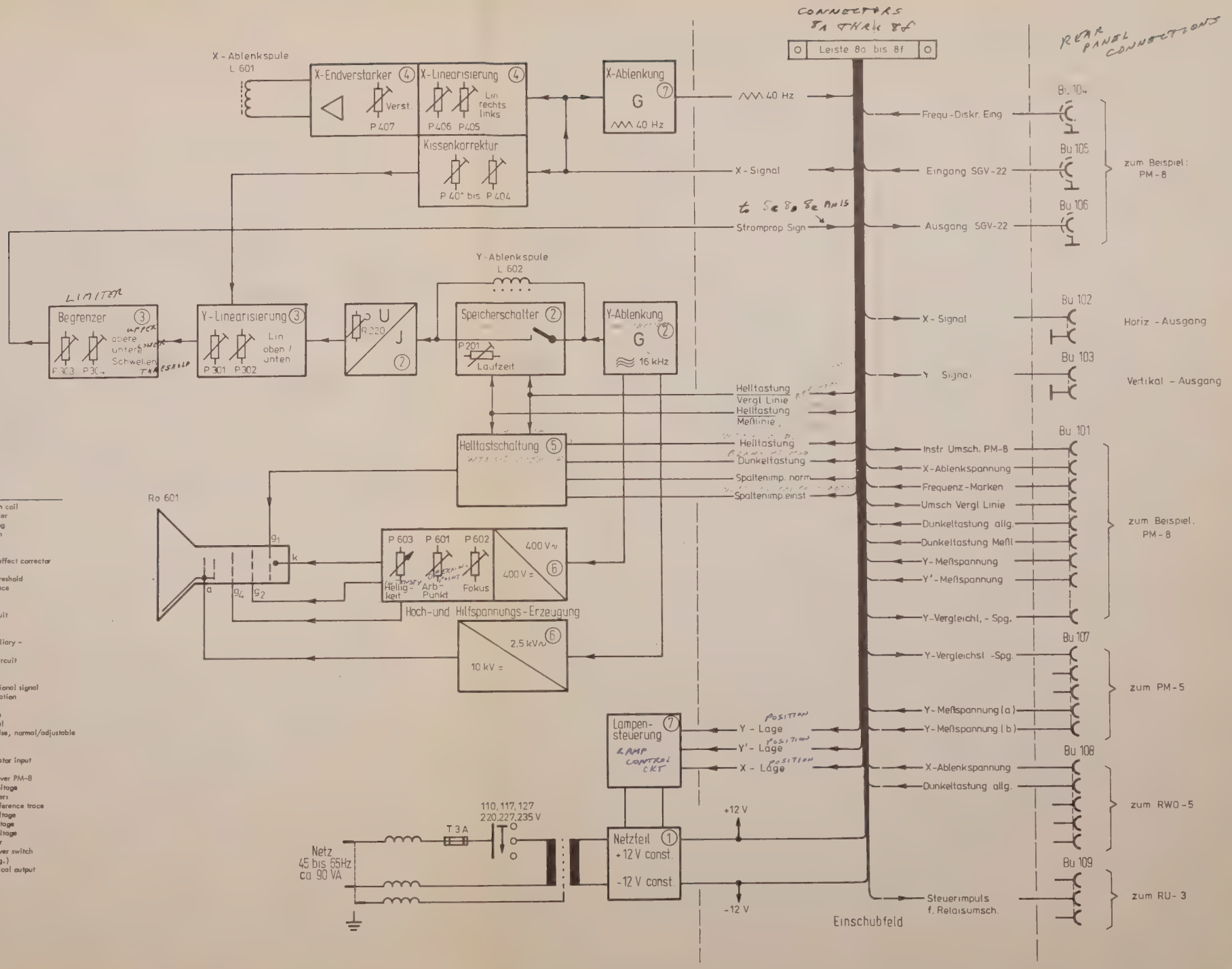
Alle angegebenen Spannungen sind mit einem Instrument 100 kΩ/V gegen 0 V gemessen

All voltage ratings measured with respect to 0 V with 100 kΩ/V meter

Relais in Ruhestellung dargestellt
Relays shown in rest position

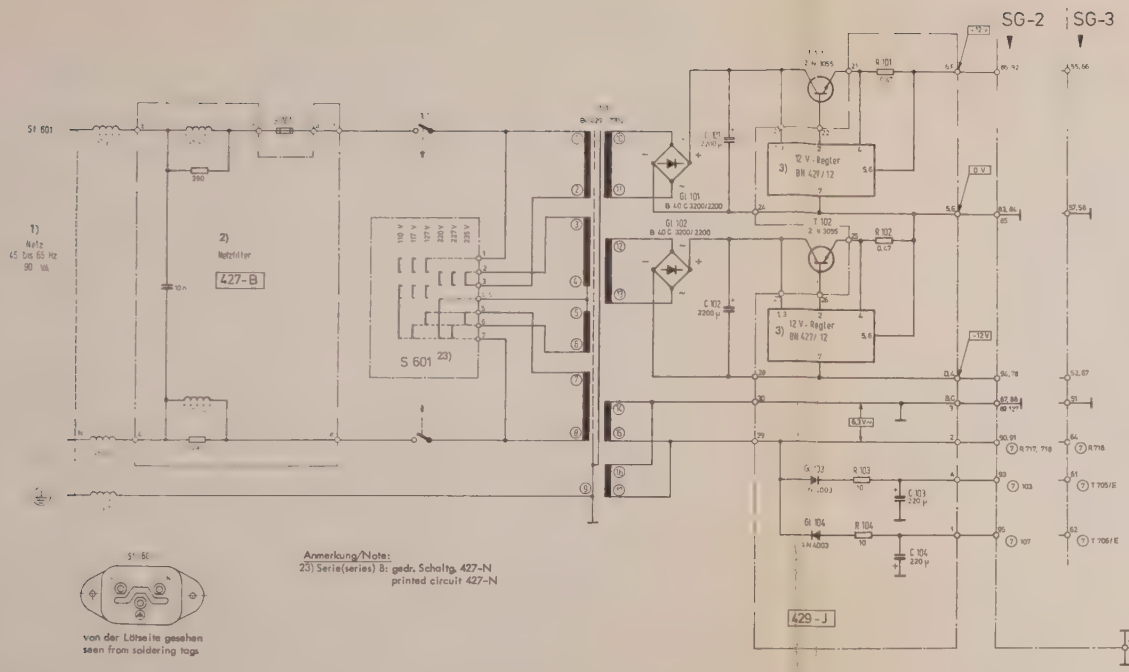
Anmerkungen
zu den Stromlaufplänen
Circuit Diagram Details

SG-2/SG-3



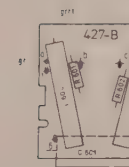
Vokabular/Vocabular	
X/Y-Ablenkspule	X-Y-deflection coil
X-Endverstärker	X-final amplifier
X/Y-Linearisierung	X/Y-linearizing
X/Y-Ablenkung	X/Y-deflection
Verst.	Amplifier
Lin. rechts/links	lin. right/left
Kissenkorrektur	"pin cushion" effect corrector
Begrenzer	Limiter
obere/untere Schwellen	upper/lower threshold
Lin. oben/unten	upper/lower trace
Speicherschalter	Store switch
Laufzeit	Delay
Helltastschaltung	Intensifier circuit
Helligkeit	Intensity
arb.-Punkt	operating point
Hoch- und Hilfspannungs-Erzeugung	High- and auxiliary - voltage supply
Lampensteuerung	Lamp control circuit
Netzteil	Power supply
Leiste	Plug-in bay
Stromprop. Sign.	Current proportional signal
Helltastung	Intensity modulation
Vergl.-Linie	Reference trace
Meßlinie	Measuring trace
Dunkeltastung allgem.	Blanking general
Spaltenimp. norm./einst.	Vertical bar pulse, normal/adjustable
Lage	Position
Einschubfeld	bay for plug-in
Freq.-Diskr.-Eing.	Freq. discriminator input
Eingang/Ausgang	Input Output
Instr.-Umsch. PM-8	Meter change-over PM-8
X-Ablenkspannung	X-deflection voltage
Frequenz-Marken	Frequency markers
Umsch.-Vergl.-Linie	Change-over reference trace
Y-Meßspannung	Y-measuring voltage
Y-Vergleichl.-Spg.	Y-reference voltage
X-Ablenkspannung	X-deflection voltage
Steuerimpuls für	Control pulse for
Relaisumsch.	Relay change-over switch
zum Beispiel	for example (e.g.)
Horiz.-/Vertikal-Ausgang	Horizontal/vertical output

Blockschaltplan SG-2/BN 429
Block diagram SG-3/BN 593

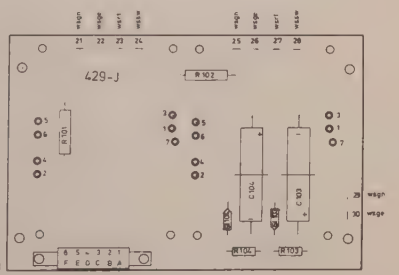


von der Lötseite gesehen
seen from soldering tags

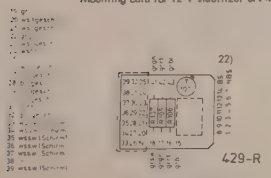
Anmerkung/Note:
23) Serie(series) B: gedr. Schaltg. 427-N
printed circuit 427-N



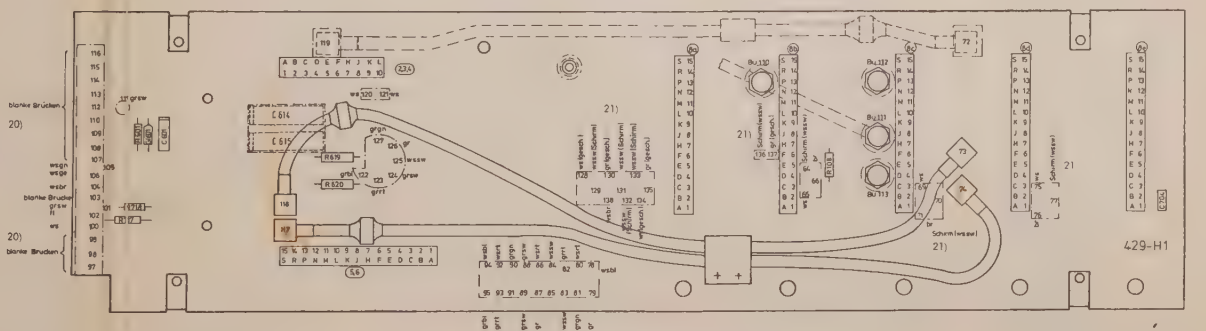
Netzfilter 1,5 kV BN 427-B
A.C. line filter BN 427-B



Trägerkarte für 12-Volt-Regler BN 429-J
Mounting card for 12 V stabilizer BN 429-J



Querverbindung BN 429-R
Cross connection BN 429-R



Verdrahtungskarte BN 429-H1
Wiring card BN 429-H1

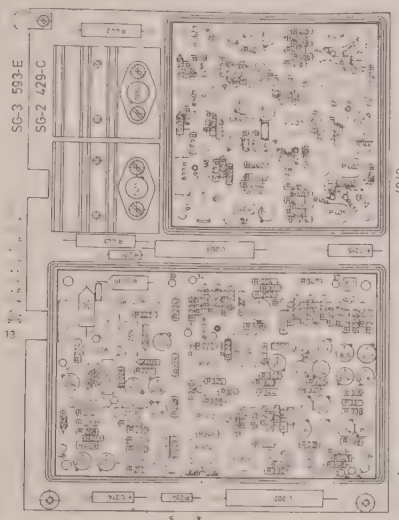
Vocabulary

1) a.c. line frequency 45 to 65 Hz
2) a.c. line filter
3) 12 V stabilizer
4) wiring plane
5) freq. discriminator output
6) input/output
7) horizontal output
8) vertical output
9) meter change-over PM-8
10) X-deflection voltage
11) frequency markers
12) tuning indicator PM-8
13) change-over
14) reference trace
15) blanking general
16) measuring trace
17) Y-measuring voltage
18) Y-reference trace voltage
19) for PM-5/RWO-5/RU-3
20) bare wire jumpers
21) screen or screened
22) BS = seen from components side
NBS = seen from soldered side

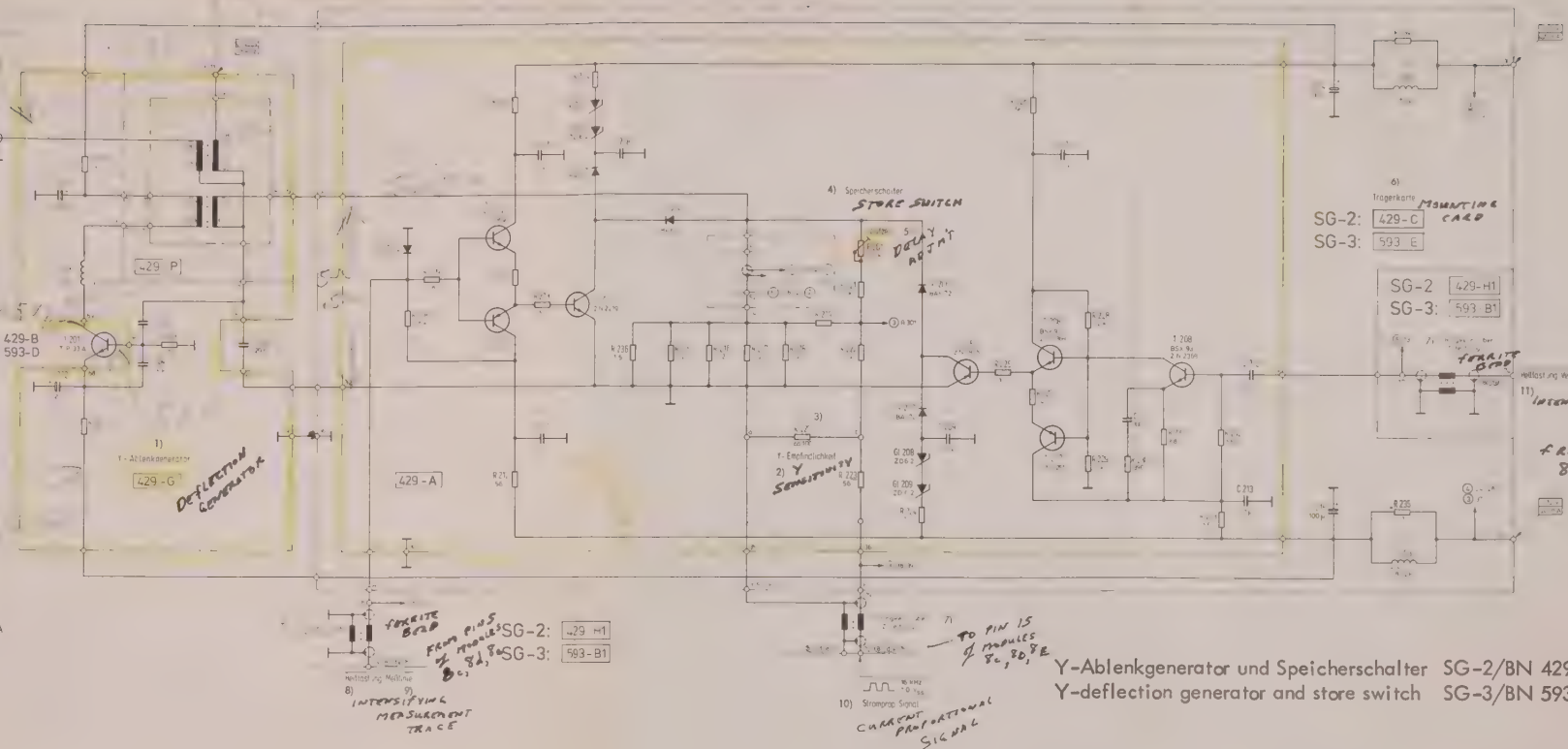
Netzteil SG-2/BN 429
Power supply SG-3/BN 593 ①

Trägerkarte 429-C
Mounting card 429-C

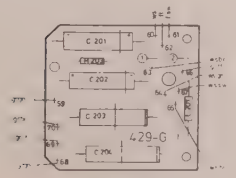
X-Linearisierung und
X-Endverstärker BN 429-B
X-linearizing and
X-final amplifier BN 429-B



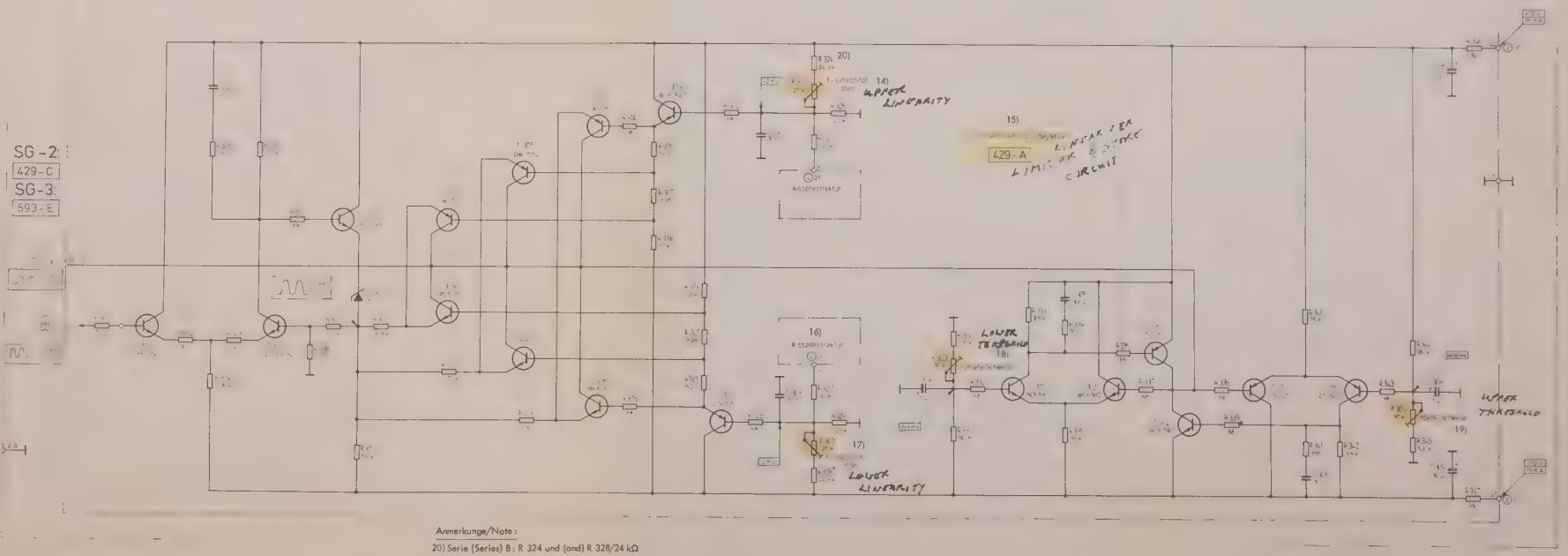
Y-Linearisierung, Begrenzer
und Speicherschalter;
Linearizer limiter and store circuit 429-A



Y-Ablenkgenerator und Speicherschalter SG-2/BN 429 ②
Y-deflection generator and store switch SG-3/BN 593



X-Ablenkgenerator;
X-deflection generator 429-G



Vocabulary

1) Y-deflection generator
2) Y-sensitivity
3) alignment value
4) store switch
5) delay
6) mounting card
7) 1 ferrite bead over lead
8) intensifying
9) measuring trace
10) current proportional signal
11) intensifying
12) reference trace
13) NBS = seen from soldered side
BS = seen from components side
14) Y-linearity upper
15) Y-linearizer and limiter
16) Correction for pincushion distortion
17) Y-linearity lower
18) Lower threshold
19) Upper threshold

Anmerkunge/Note:
20) Serie (Series) B: R 324 und (and) R 328/24 kΩ

Y-Linearisierung und Y-Begrenzer SG-2/BN 429 ③
Y-linearizer and Y-limiter SG-3/BN 593

Trägerkarte 429-F
Mounting card 429-F

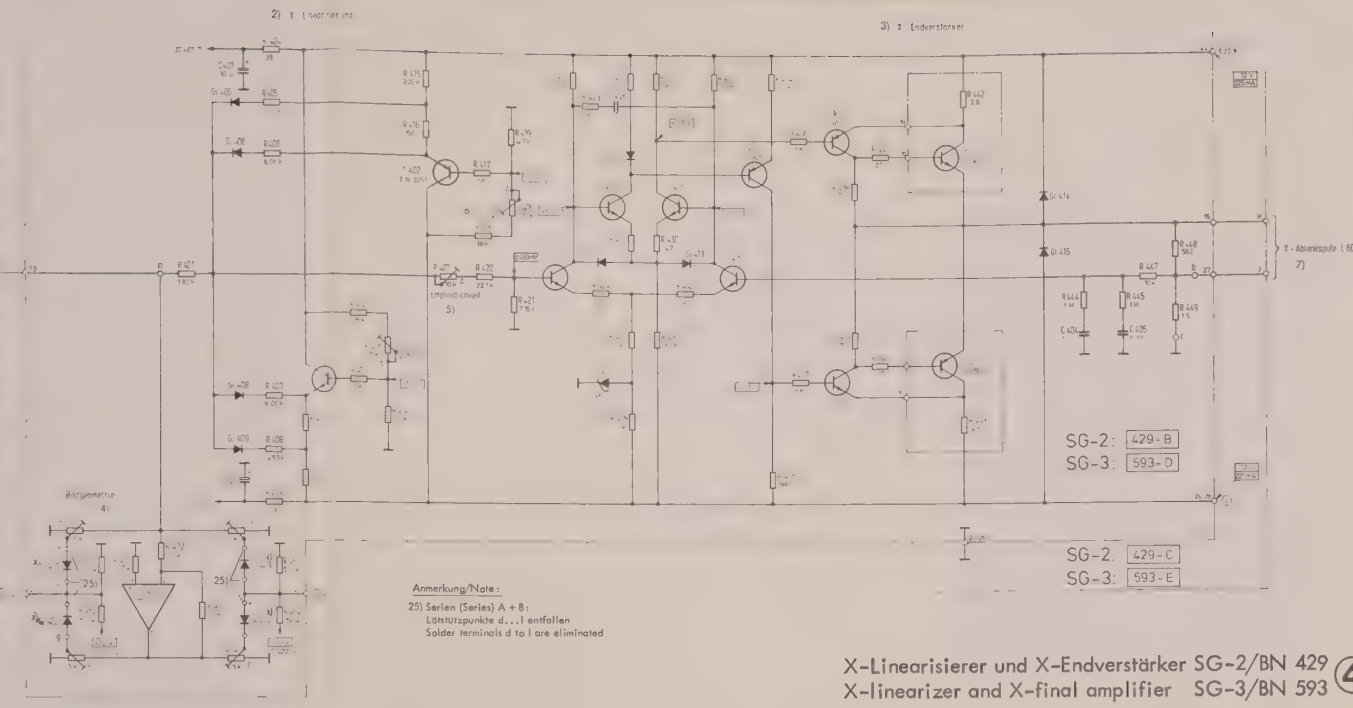
Hochspannungserzeugung 429-Q1
High voltage supply 429-Q1

Hoch- und Hilfsspannungserzeugung 429-D
High- and auxiliary voltage supply 429-D

Helltastschaltung 429-E1
Intensifier circuit 429-E1

Vocabulary

1) X-deflection voltage
2) X-linearizing
3) X-final amplifier
4) image geometry
5) sensitivity
6) X-lin. left
7) X-deflection coil L 601
8) mounting card
9) X-intensity keying
10) blanking
11) reference trace
12) measuring trace
13) Z-modulation
14) general
15) vertical bar pulse
16) intensity, adjustable
17) intensity, normal
18) Z-modulation intensify
19) bar contrast
20) screen 1
21) intensifier circuit
22) NBS = seen from components side
BS = seen from soldered side
23) Intensity keying
Measuring trace
24) Intensity keying
Reference trace
26) Intensity



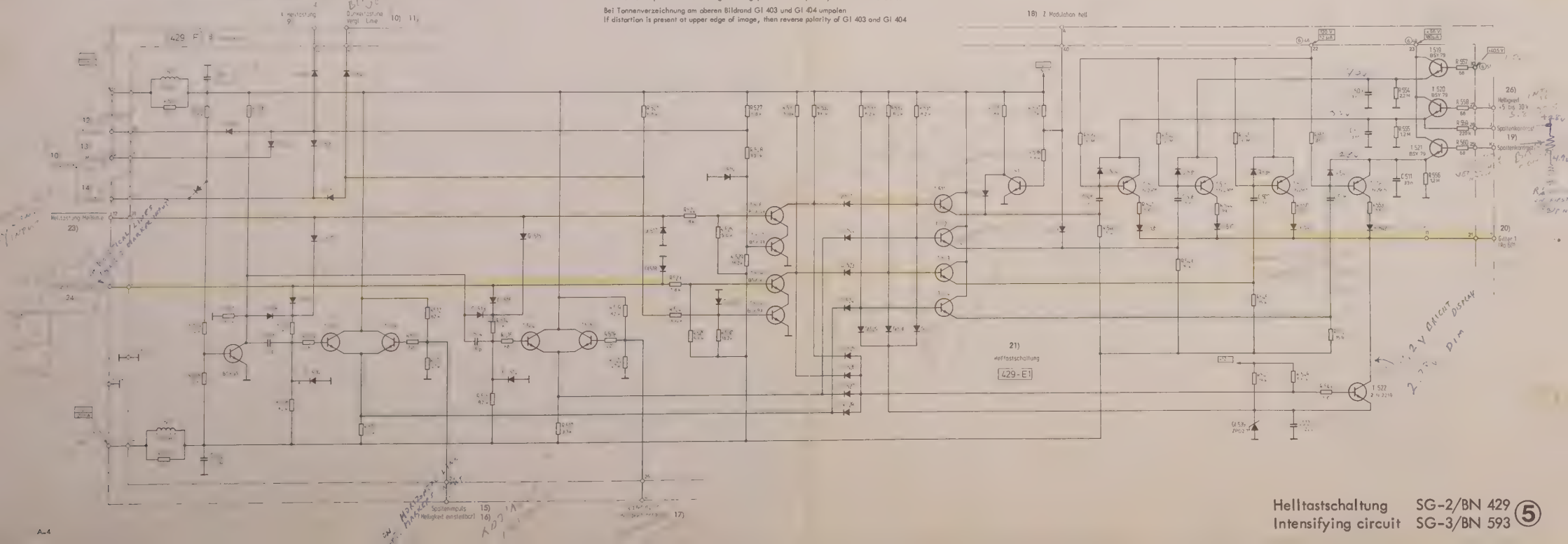
Anmerkung/Note:

25) Serien (Series) A + B:
Lötstützpunkte d...l entfallen
Solder terminals d to l are eliminated

x) Bei Tonnenverzeichnung am unteren Bildrand Gl 401 und Gl 402 umpolen
If distortion is present at lower edge of image, then reverse polarity of Gl 401 and Gl 402

Bei Tonnenverzeichnung am oberen Bildrand Gl 403 und Gl 404 umpolen
If distortion is present at upper edge of image, then reverse polarity of Gl 403 and Gl 404

X-Linearisierer und X-Endverstärker SG-2/BN 429 ④
X-linearizer and X-final amplifier SG-3/BN 593



Helltastschaltung SG-2/BN 429 ⑤
Intensifying circuit SG-3/BN 593

Vocabulary

2) wiring plane
3) operating point
4) focus
5) X/Y deflection coil
6) intensity
7) auxiliary voltage supply
8) high voltage supply
9) mounting card
10) X-deflection voltage internal
11) Control voltage
12) store pulse
13) position
14) lamp control circuit
15) upper/lower
16) right/left
17) graticule illumination
18) graticule
19) instrument on/off

SG-3
siehe Buchsenbelegungsplan
(see connections arrangement plan)

SG-2
siehe Buchsenbelegungsplan
(see connections arrangement plan)

Trägerkarte BN 429-F
Mounting card BN 429-F

Hochspannungserzeugung BN 429-Q1
High voltage supply BN 429-Q1

Lampensteuerung BN 429-L
Lamp control circuit BN 429-L

Hoch- und Hilfsspannungserzeugung BN 429-D
High- and auxiliary voltage supply BN 429-D

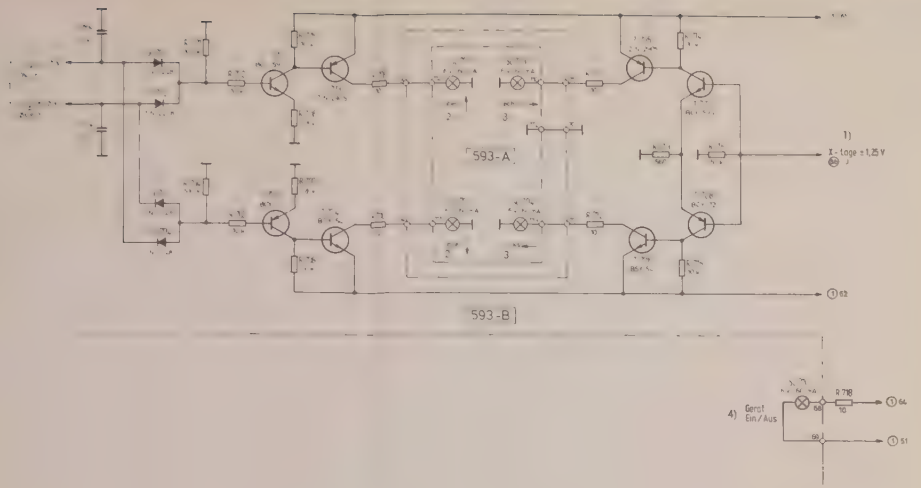
Helltastschaltung BN 429-E1
Intensifier circuit BN 429-E1

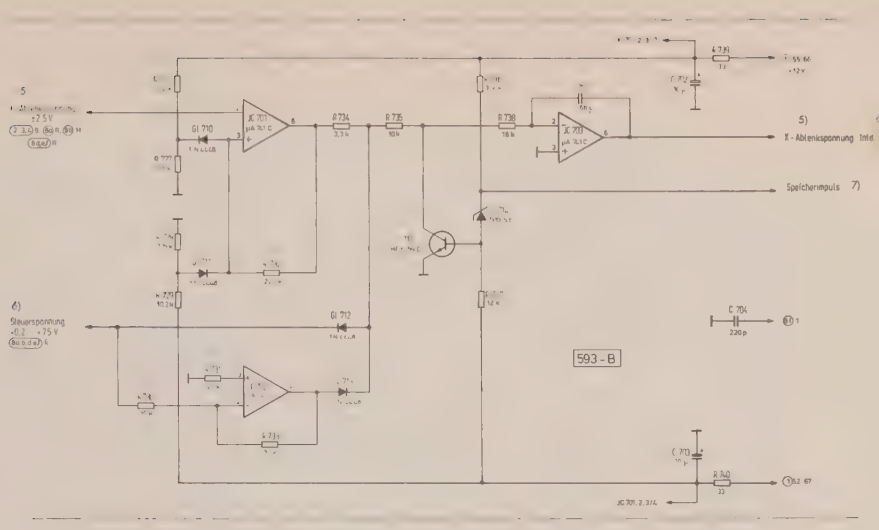
Anmerkung/Note:
1) Serie (Series) A + B: gedr. Schaltung 429-Q, C 614 und C 615/10 n
printed circuit 429-Q, C 614 and C 615/10 n

Hoch- und Hilfsspannungserzeugung SG-2/BN 429 SG-3/BN 593 (6)
High voltage and auxiliary voltage supply SG-2/BN 429 SG-3/BN 593 (6)

Lampensteuerung und X-Ablenkgenerator SG-2/BN 429 SG-3/BN 593 (7)
Lamp control and auxiliary voltage supply SG-2/BN 429 SG-3/BN 593 (7)

Fortsetzung (continued)

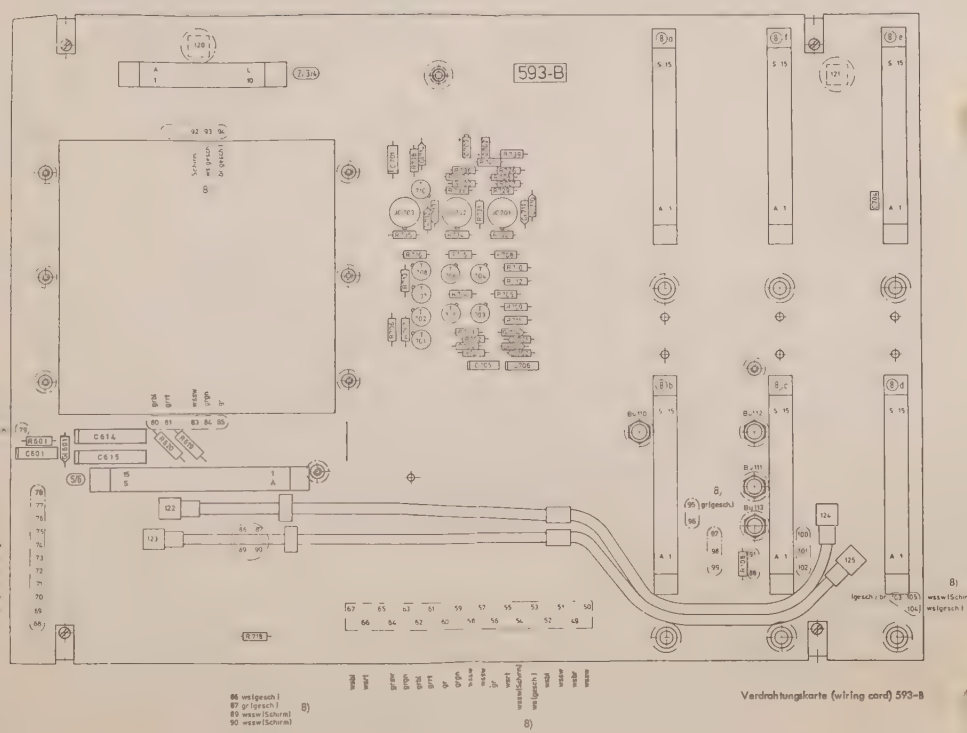




Lampensteuerung
Lamp control circuit 593-A

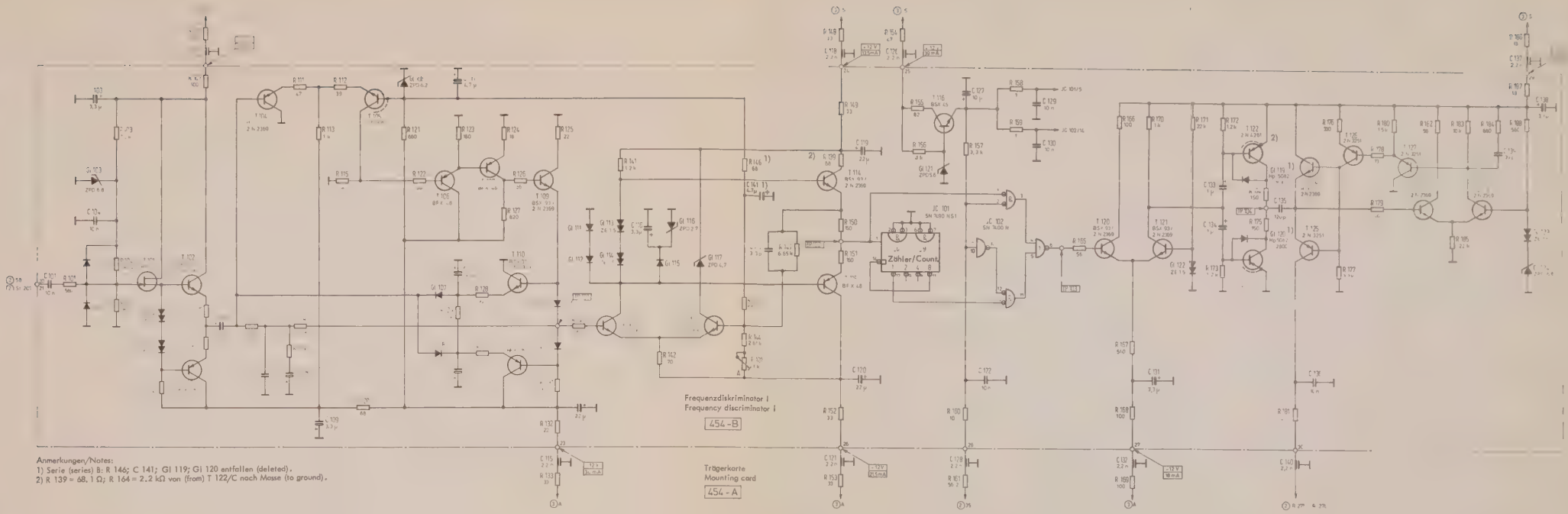
Vocabulary

1) X/Y position
2) upper/lower
3) right/left
4) instrument on/off
5) X deflection voltage
6) control voltage
7) store pulse
8) screen (screened)

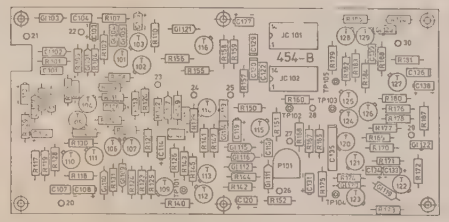


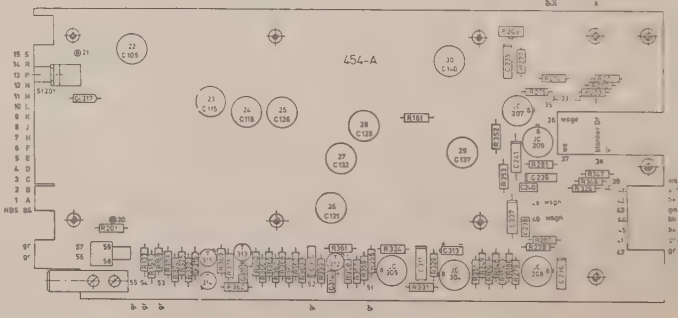
Verdrahtungskarte (wiring card) 593-B

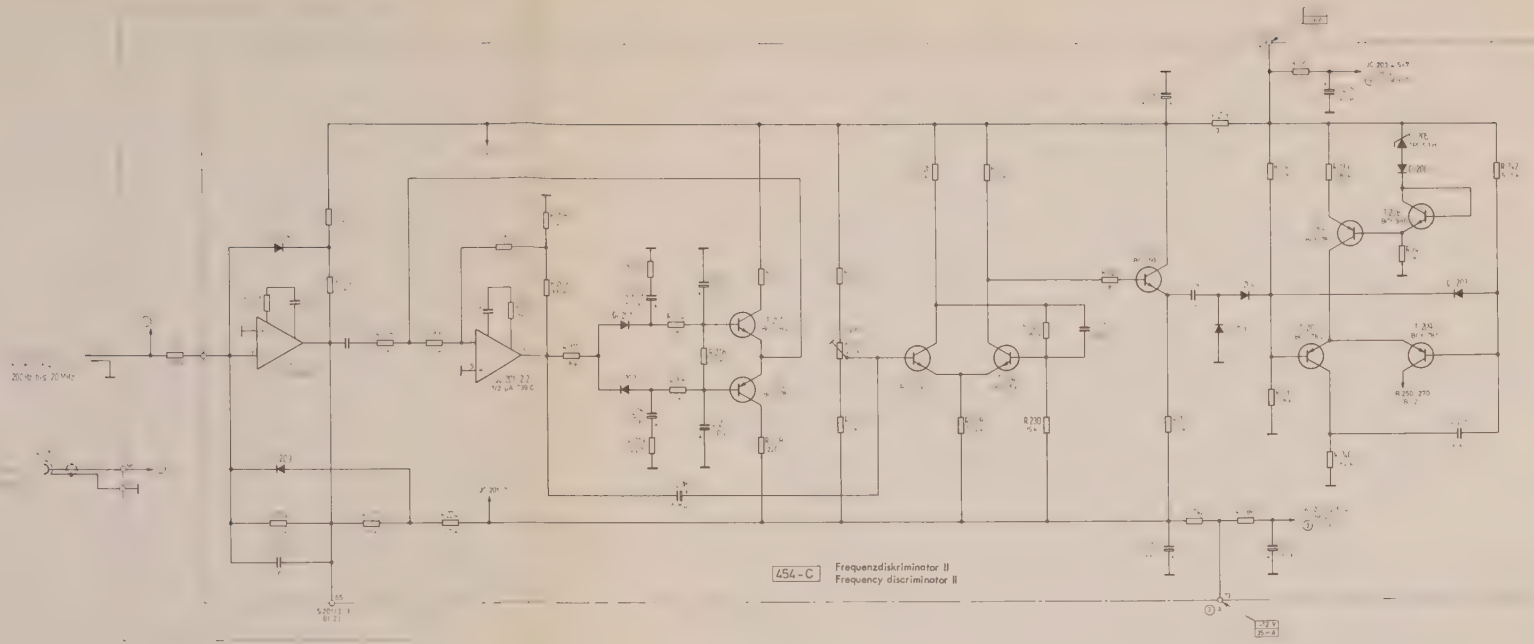
Fortsetzung (continued)

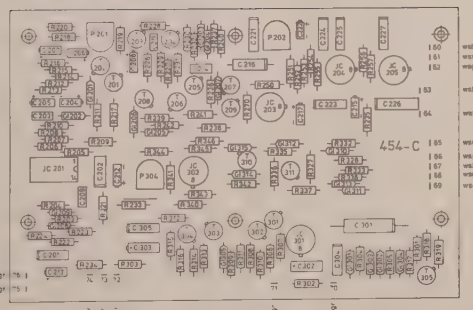


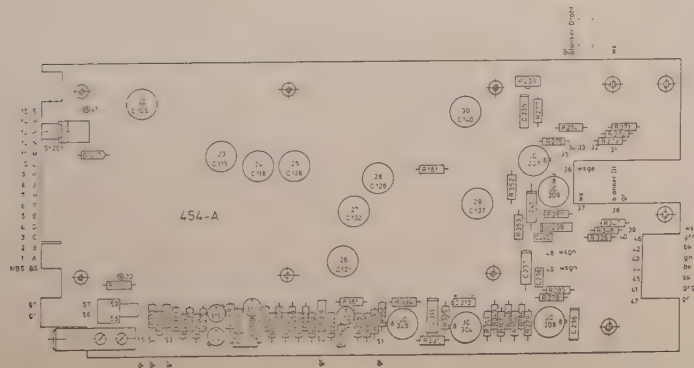
Anmerkungen/Notes:
1) Serie (series) B: R 146; C 141; Gl 119; Gl 120 entfallen (deleted).
2) R 139 = 68.1 Ω; R 164 = 2.2 kΩ von (from) T 122/C nach Masse (to ground).

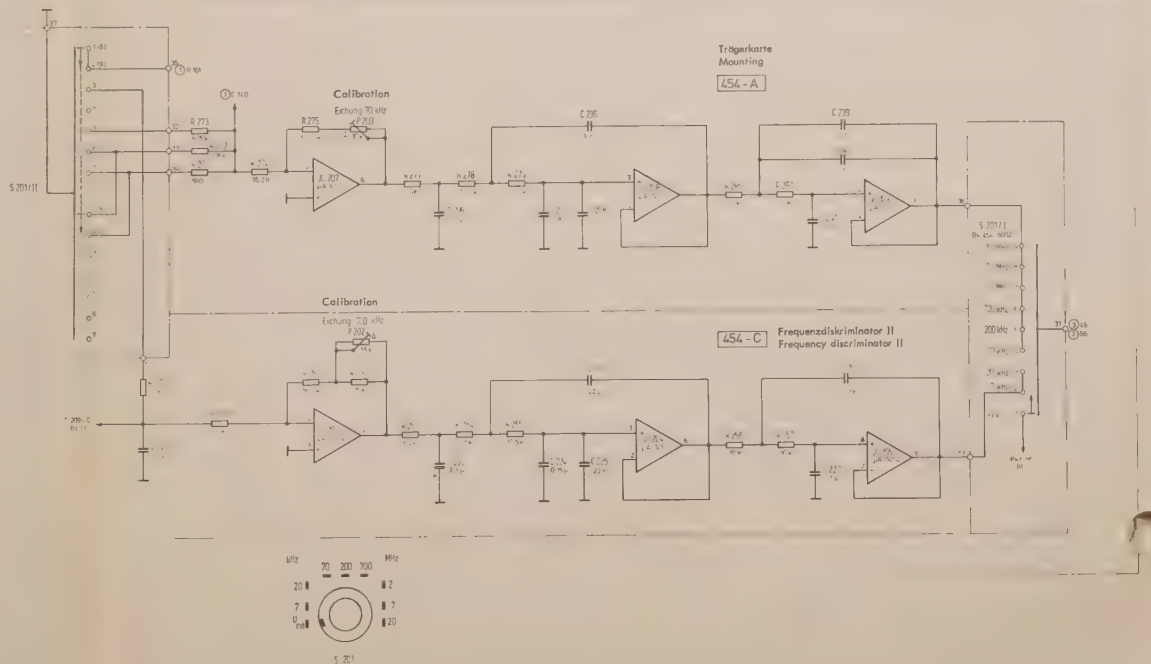




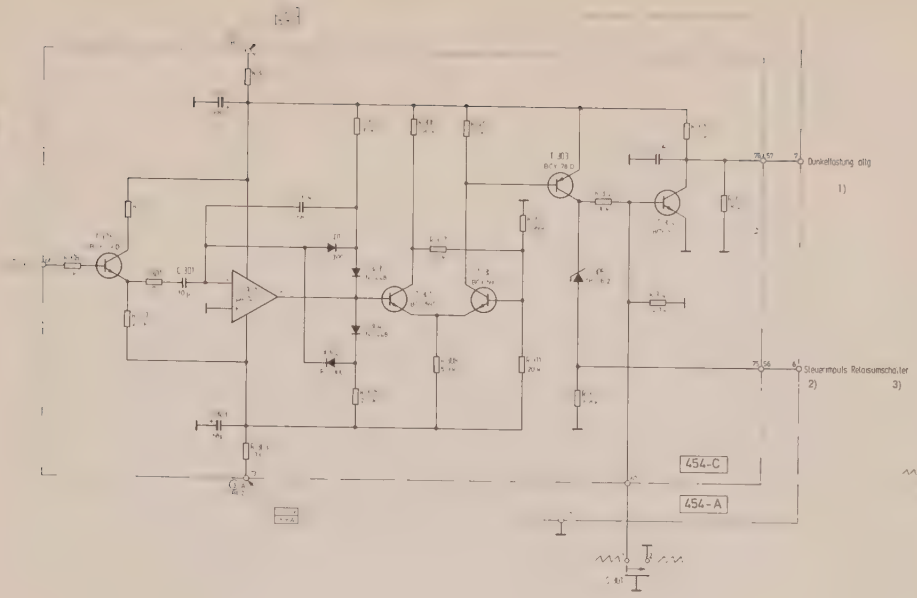


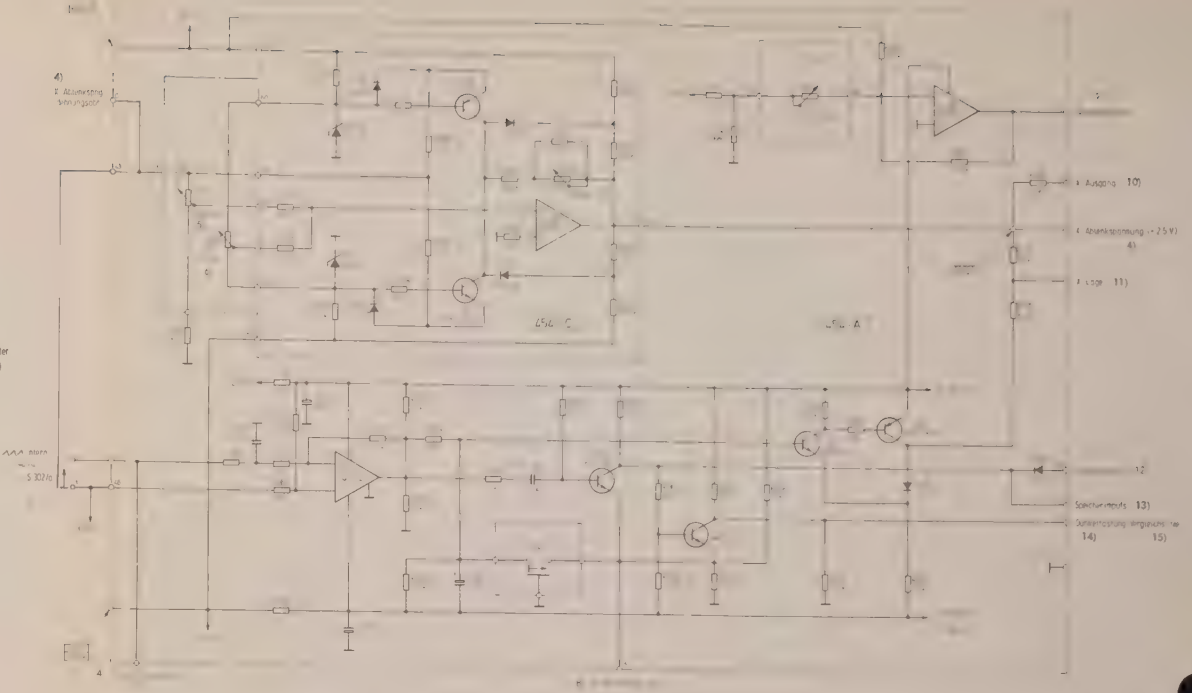






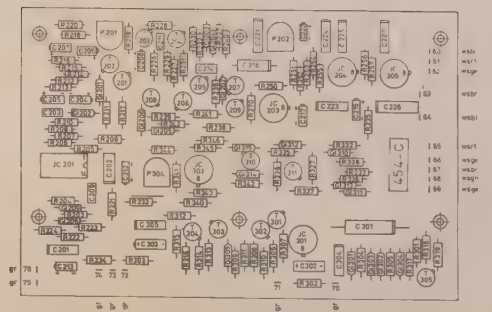
Frequenzdiskriminator II SGD-21 (2)
Frequency discriminator II BN 454

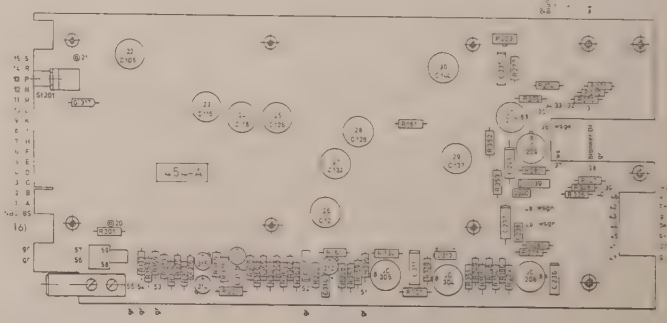




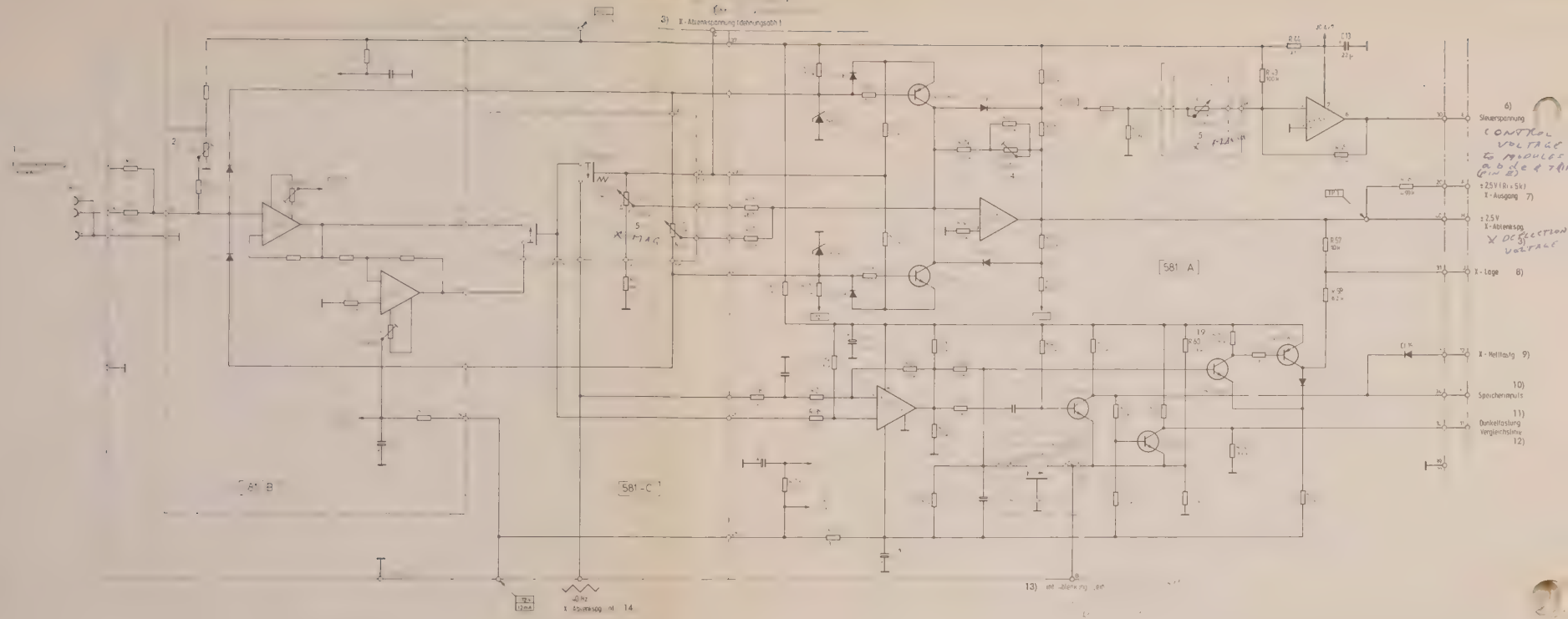
Vocabulary

1) blanking general
2) control pulse
3) Relay Change-over Switch
4) X-deflection voltage
internal (dependent on magnification
5) X-MAG
6) Zero
7) Calibrate
8) Internal deflection "ON"
9) Control voltage
10) X-output
11) X-position
12) X-intensity
13) Store pulse
14) Reference trace
15) Bare wire
16) BS = components side
NBS = soldered side





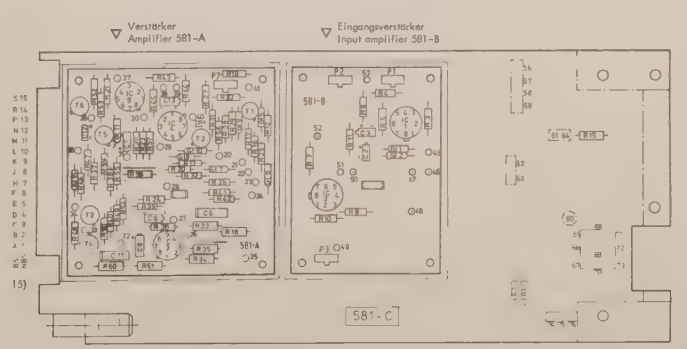
Dunkeltastschaltung und X-Verstärker SGD-21
Blanking circuit and X-amplifier BN 454 ③



Vocabulary

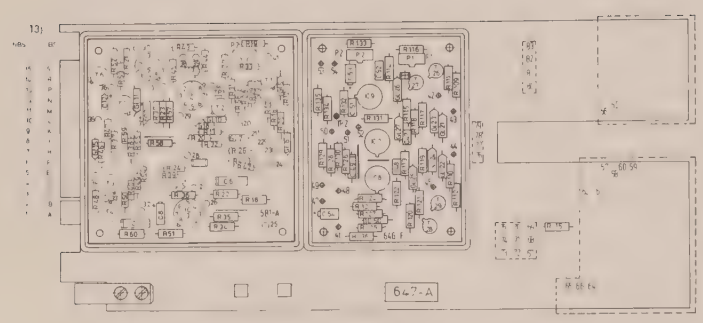
1) X-deflection voltage (back panel)
2) Input current
3) X-deflection voltage internal (mag. dep.)
4) Calibration
5) X-MAG
6) Control voltage
7) X-output
8) X-position
9) X-intensity
10) Store pulse
11) Blanking
12) Reference trace
13) Internal deflection "ON"
14) X-deflection voltage (internal)
15) NBS = Soldered side
BS = Components side

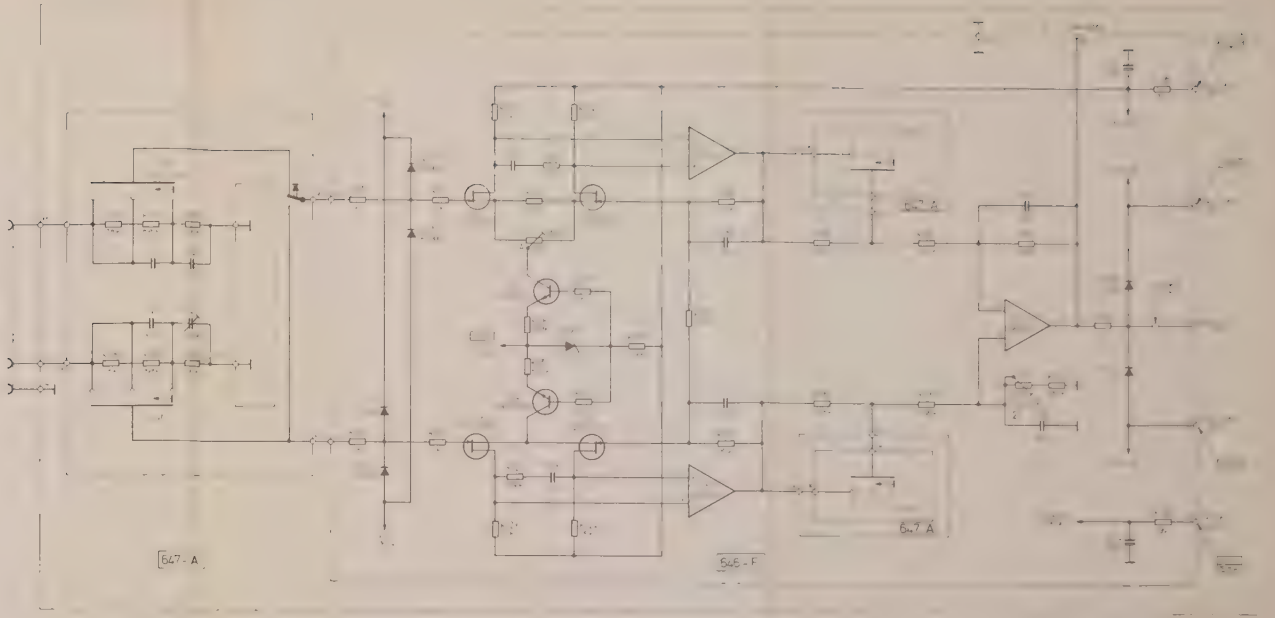
Anmerkung / Note :
19) Serie (series) A...C · R 60/6.8 k

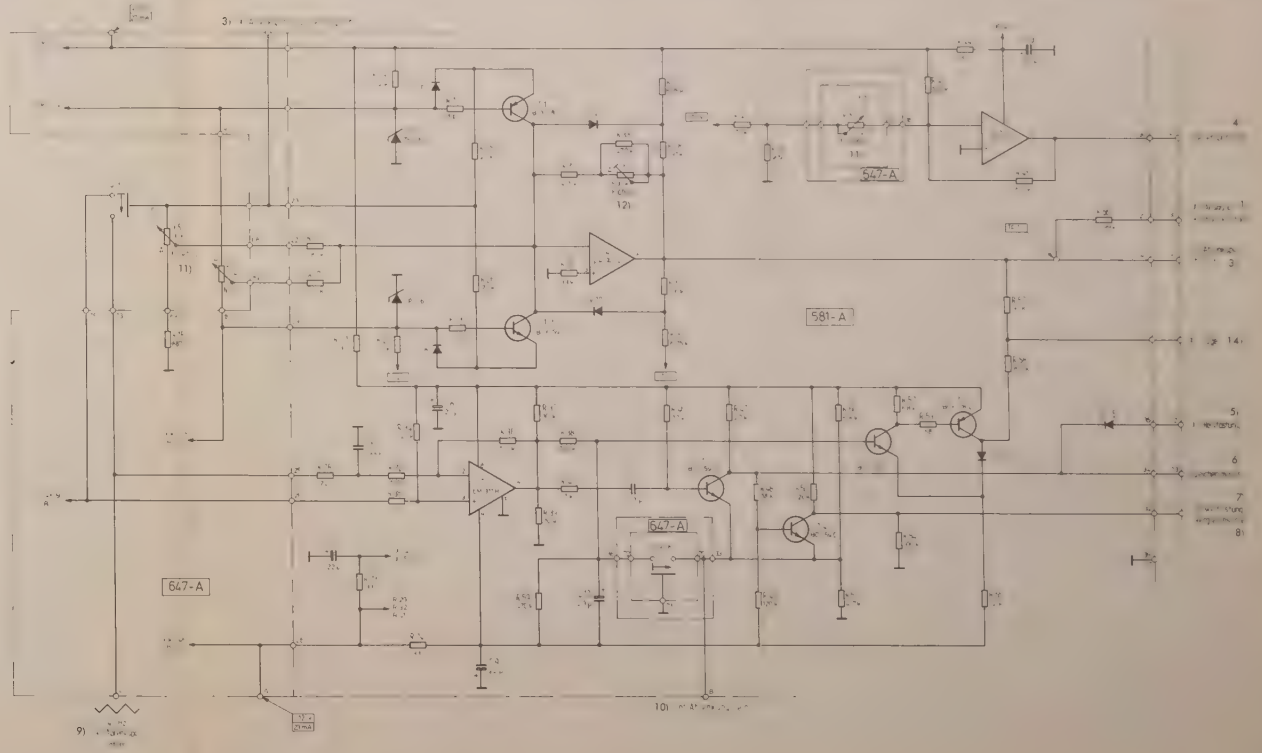


Trägerkarte
Mounting cord 581-C

X-Verstärker SGH-21
X-amplifier BN 581







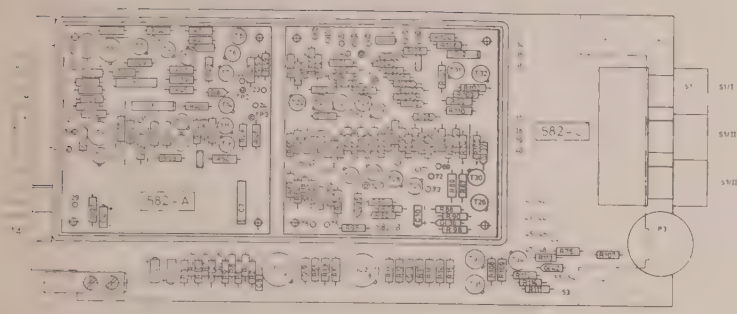
Vocabulary

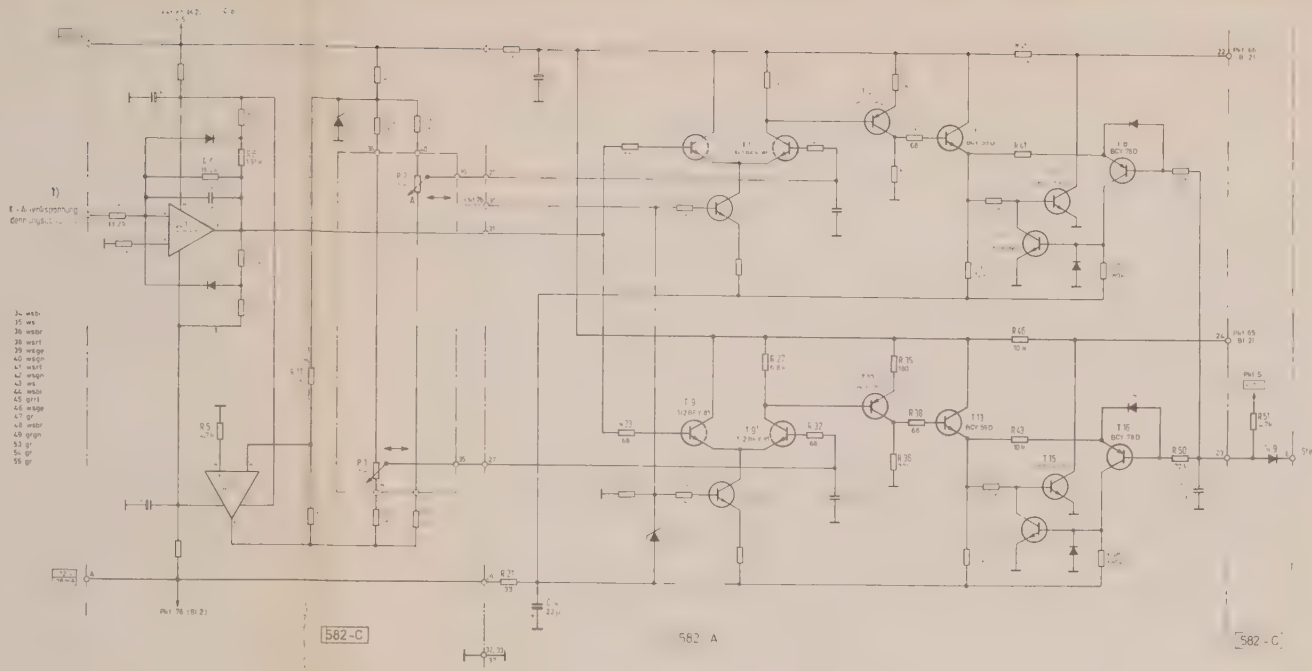
1) X/Y Output
2) Common mode
3) X-deflection voltage (MAG dependent)
4) Control voltage
5) X-intensity
6) Store pulse
7) Blanking
8) Reference trace
9) X-deflection internal
10) Internal deflection "ON"
11) X-MAG
12) Calibration
13) NBS = Soldered side
BS = Components side
14) X-position

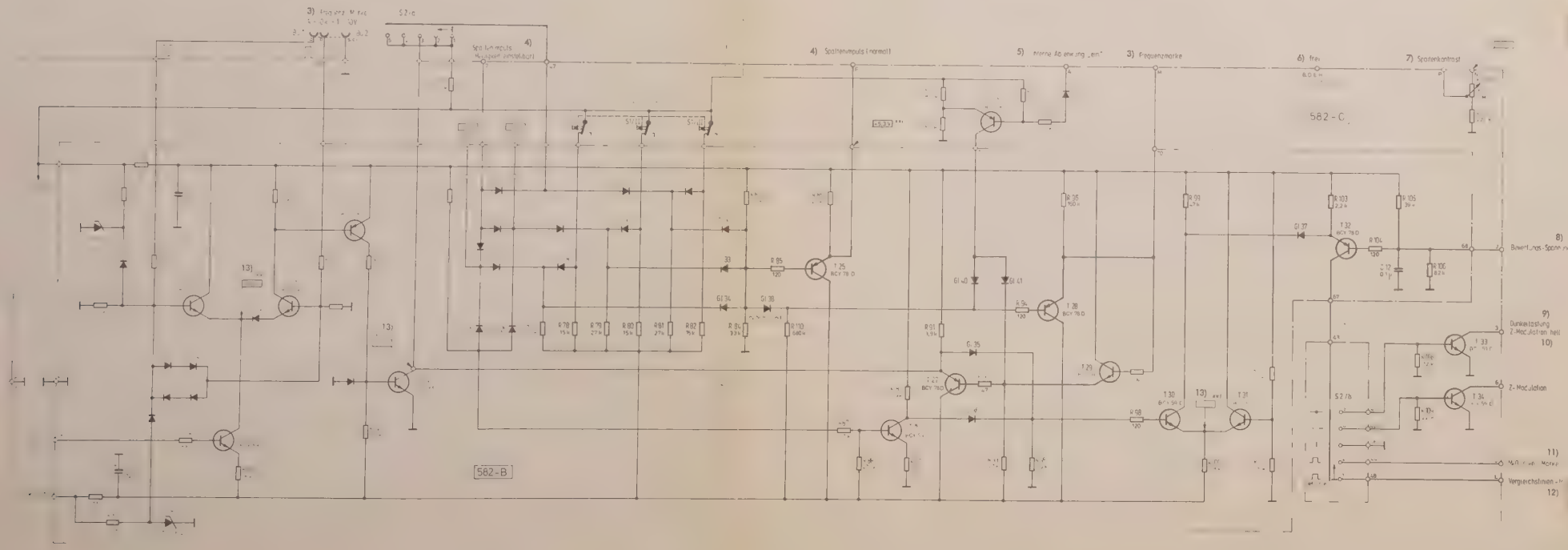
X-Verstärker SGH-22
X-amplifier BN 647

Vocabulary

1) X-deflection voltage (MAG dependent)
2) Control voltage
3) Frequency marker
4) Column pulse (intensity adjustable)
5) Internal deflection "ON"
6) Free
7) Column contrast
8) Bias voltage
9) Blanking
10) Z-modulation-light
11) Measurement trace
12) Reference trace-marker
13) xx) without signal drive
14) NBS = Soldered side
BS = Components side



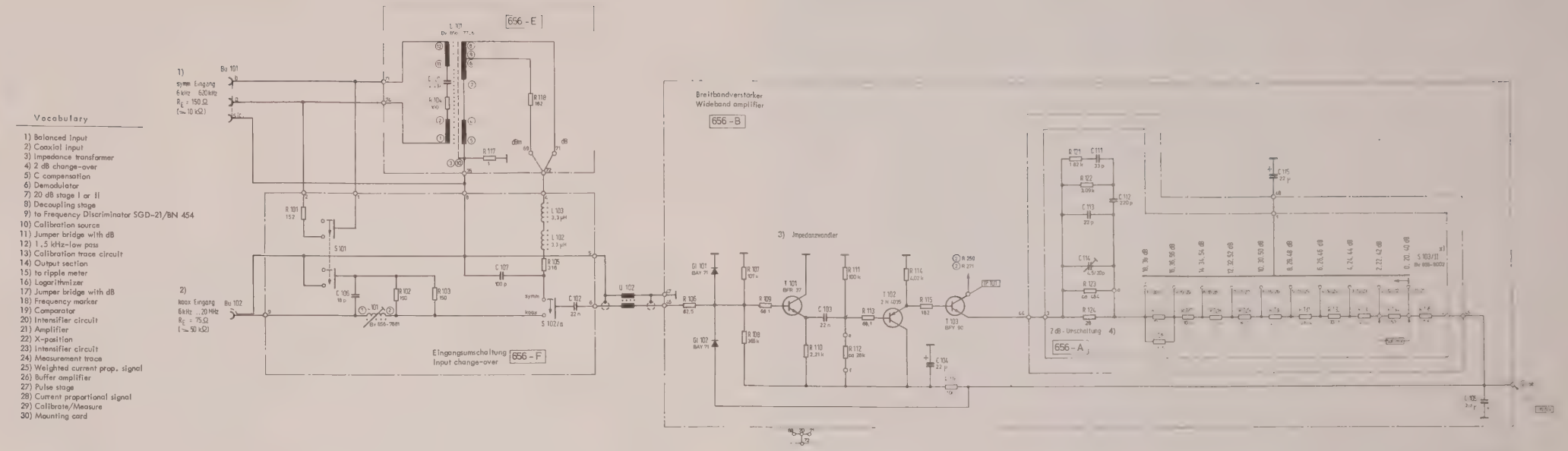




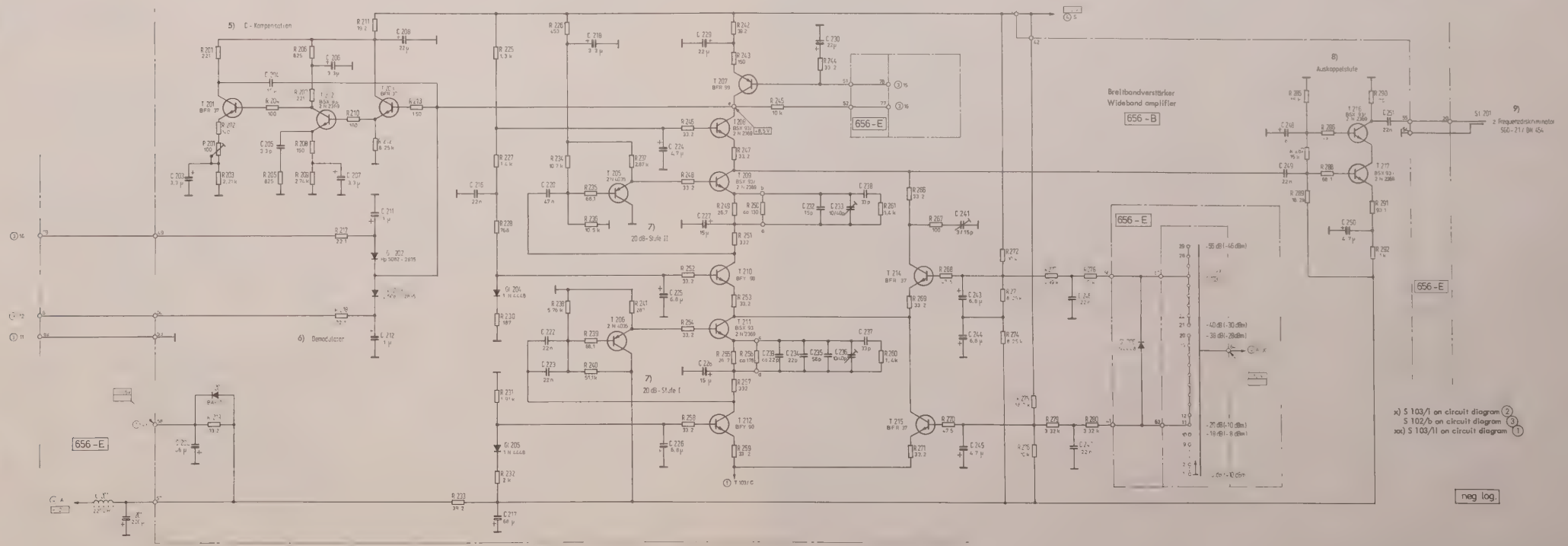
Frequenzmarken SGM-21
Frequency markers BN 582

Vocabulary

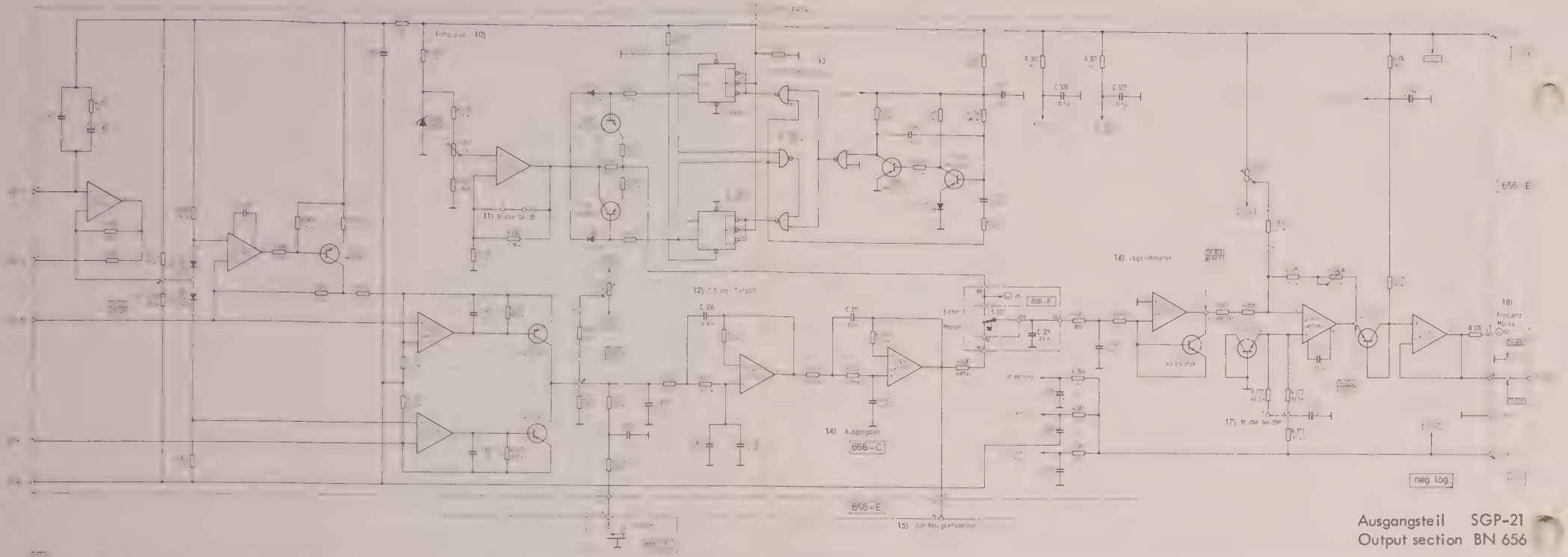
1) Balanced input
2) Coaxial input
3) Impedance transformer
4) 2 dB change-over
5) C compensation
6) Demodulator
7) 20 dB stage I or II
8) Decoupling stage
9) to Frequency Discriminator SGD-21/BN 454
10) Calibration source
11) Jumper bridge with dB
12) 1,5 kHz-low pass
13) Calibration trace circuit
14) Output section
15) to ripple meter
16) Logarithmizer
17) Jumper bridge with dB
18) Frequency marker
19) Comparator
20) Intensifier circuit
21) Amplifier
22) X-position
23) Intensifier circuit
24) Measurement trace
25) Weighted current prop. signal
26) Buffer amplifier
27) Pulse stage
28) Current proportional signal
29) Calibrate/Measure
30) Mounting card



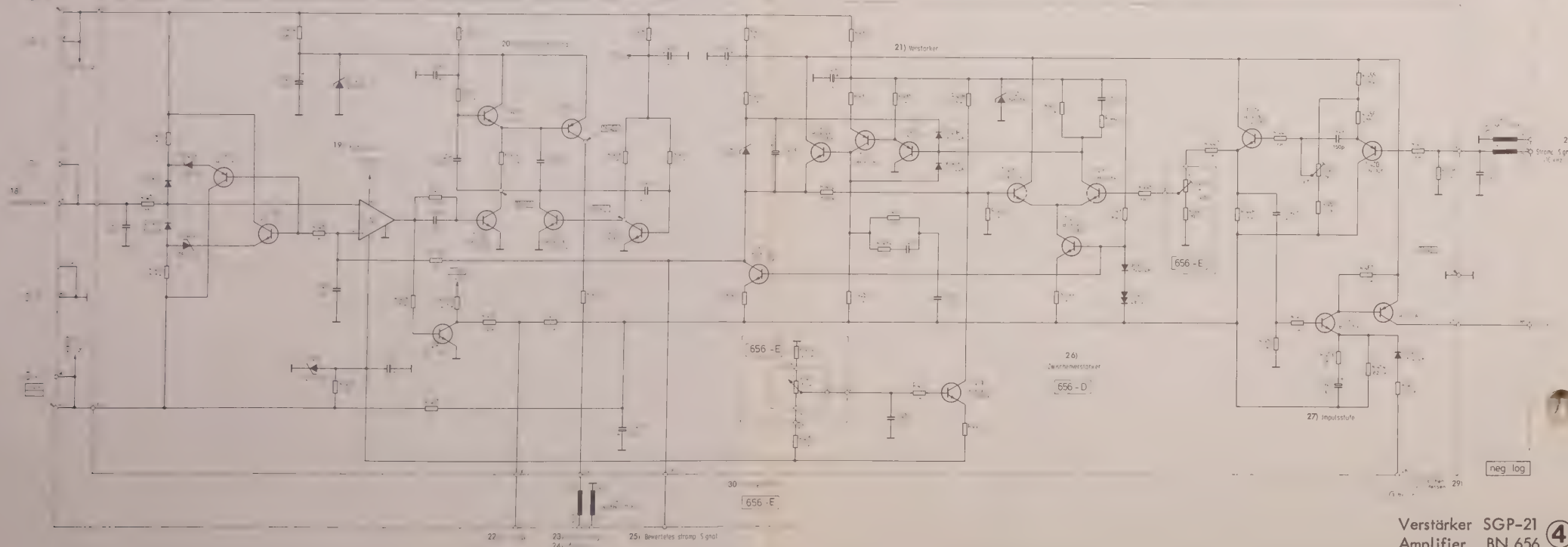
Eingangsteil SGP-21 ①
Input section BN 656


5) C - Kompensation
6) Demodulator
7) 20 dB-Stufe II
7) 20 dB-Stufe I
8) Auskoppelstufe
9) z Frequenzdiskriminator SGD-21/BN 454
Breitbandverstärker Wideband amplifier
656 - B
656 - E
x) S 103/1 on circuit diagram ②
S 102/b on circuit diagram ③
xx) S 103/11 on circuit diagram ①
neg log.

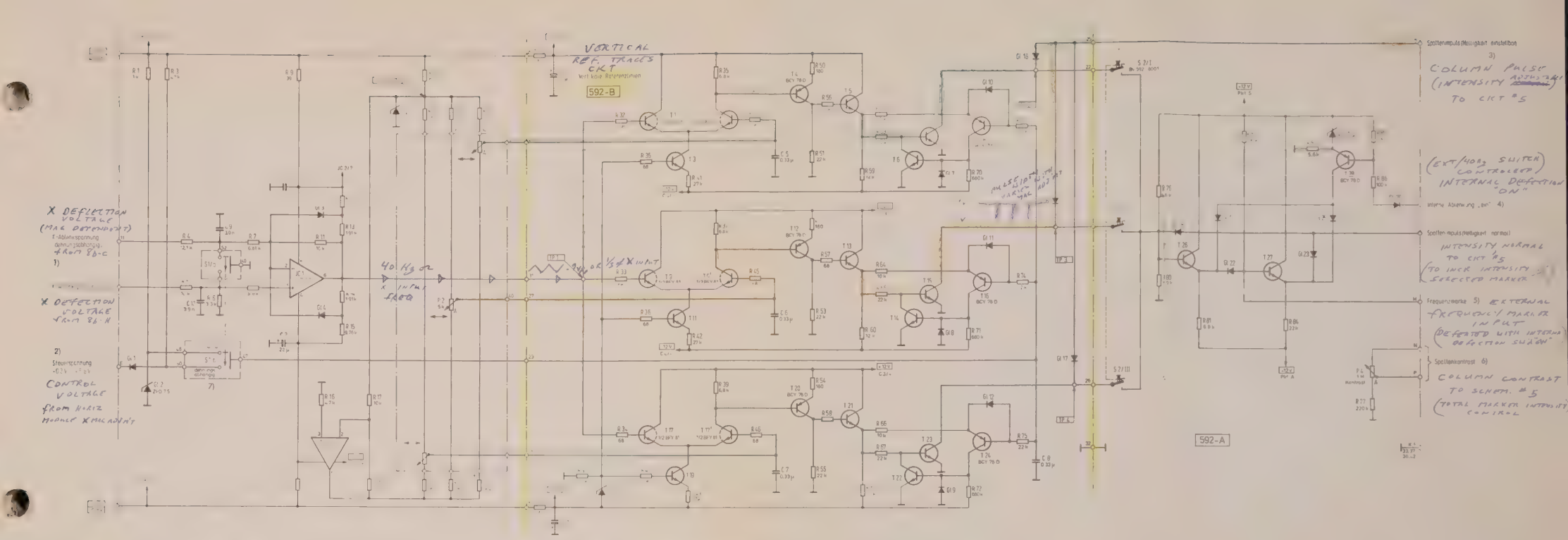
Breitbandverstärker SGP-21 ②
Wideband amplifier BN 656

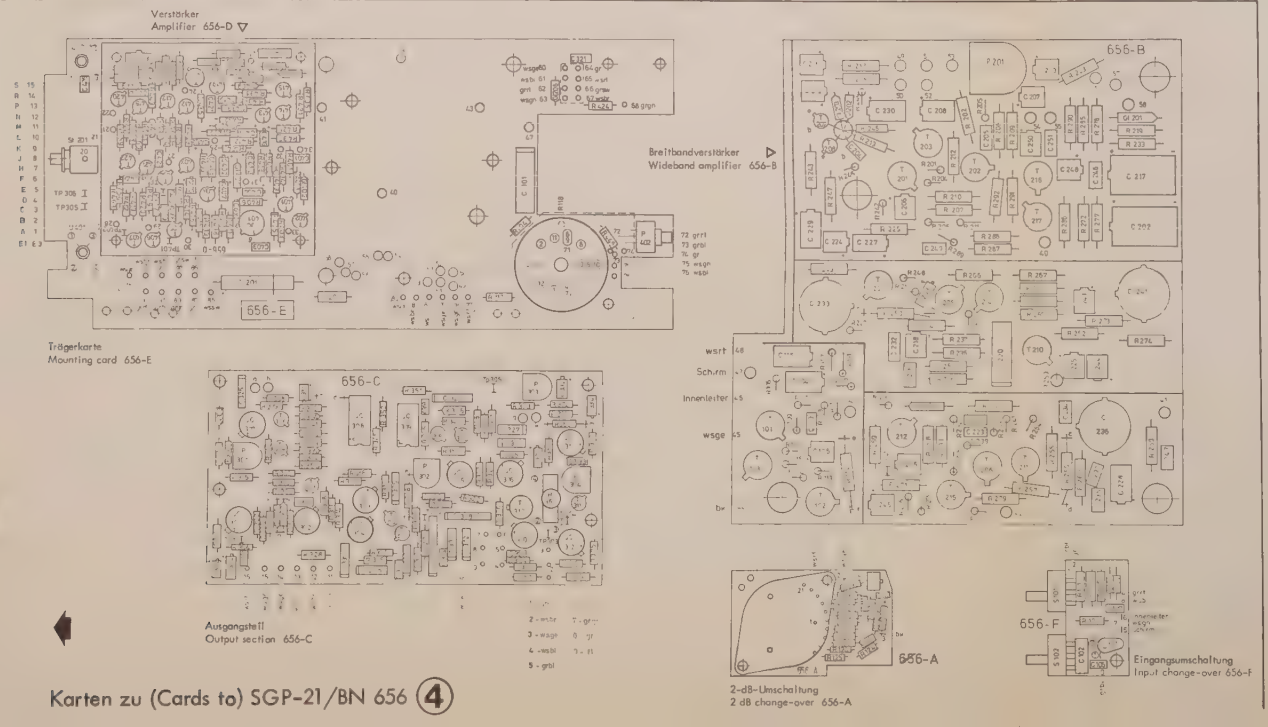


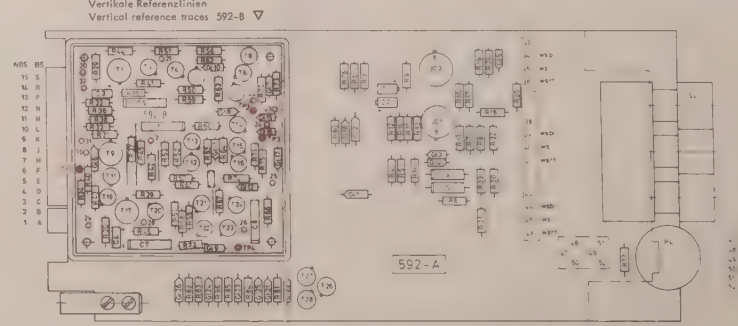
Ausgangsteil SGP-21
Output section BN 656



Verstärker SGP-21
Amplifier BN 656 (4)





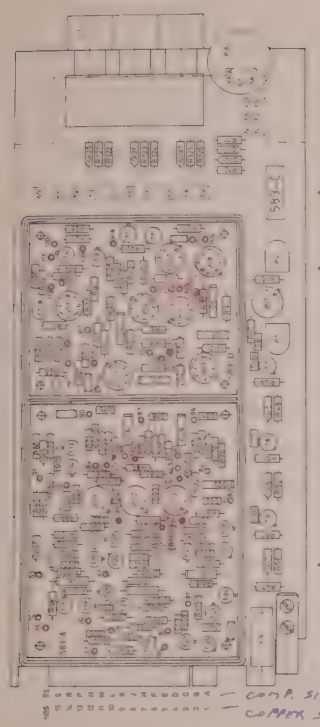


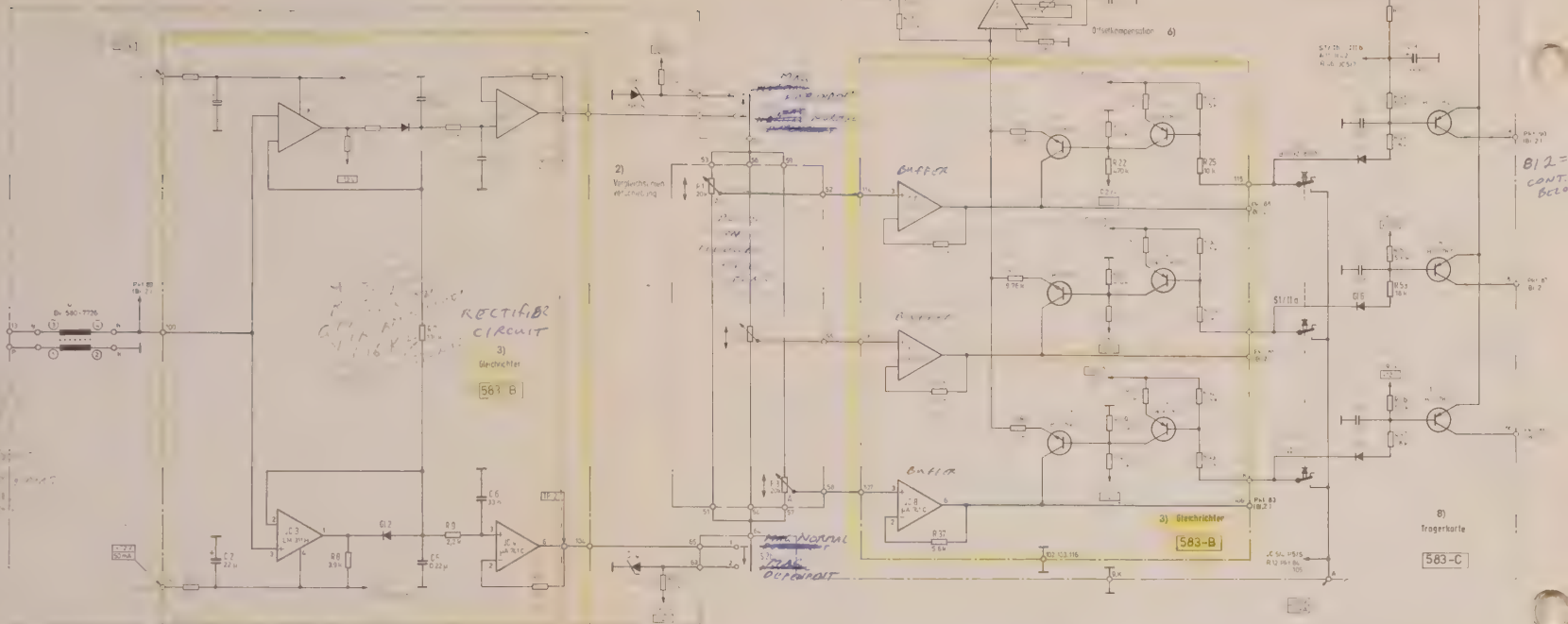
Vocabulary

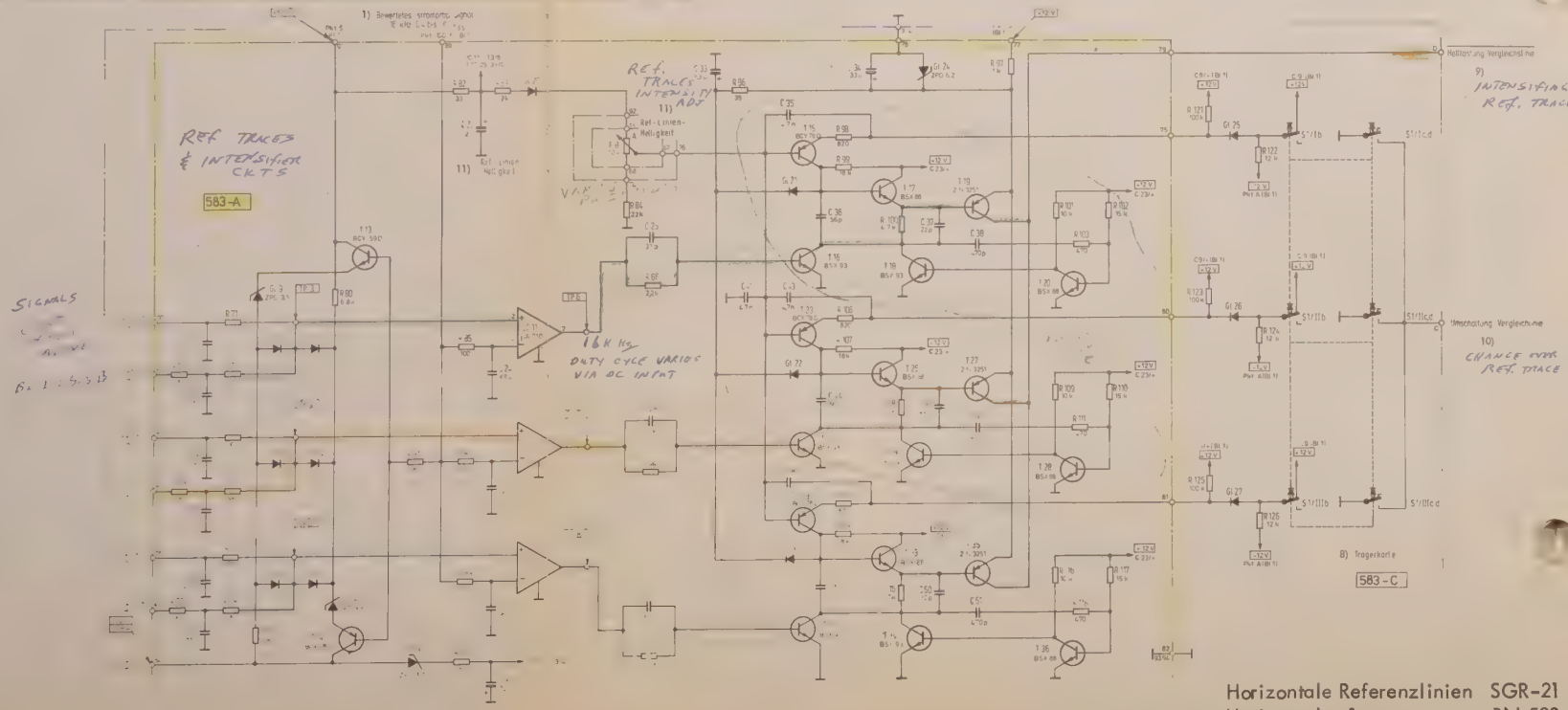
1) X-deflection voltage (MAG dependent)
2) Control voltage
3) Column pulse (intensity adjustable)
4) Internal deflection "ON"
5) Frequency marker
6) Column contrast
7) MAG dependent

Karten zu (Cards to) SGP-21/BN 656 (4)

Vertikale Referenzlinien SGR-22
Vertical reference traces BN 592



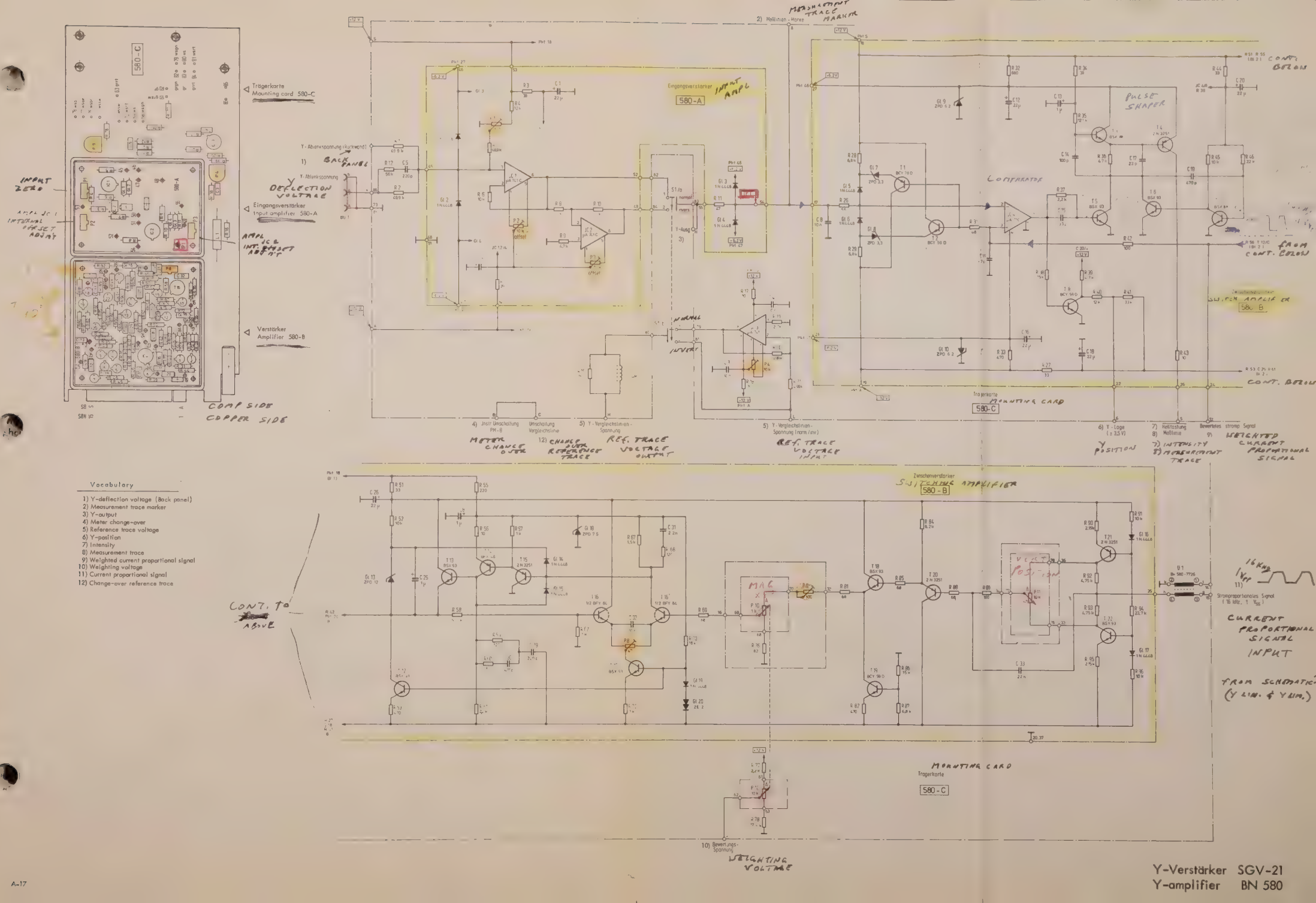




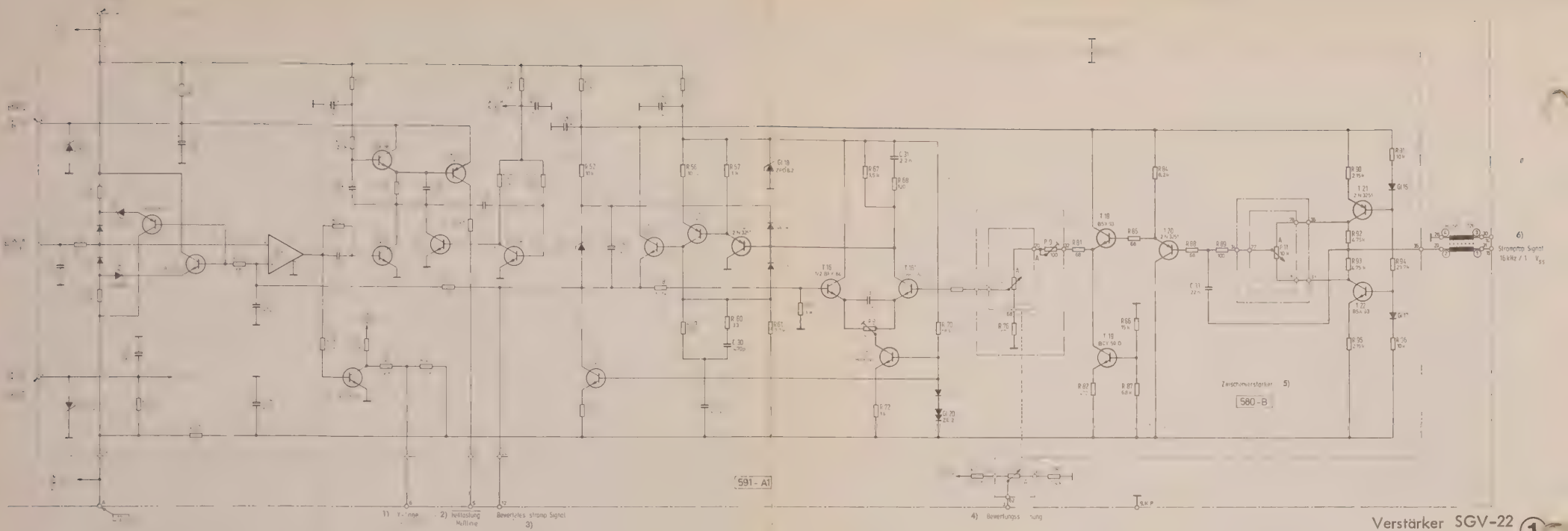
Vocabulary

1) Weighted current proportional signal
2) Reference traces shift
3) Rectifier
4) Gain
5) Y-reference trace voltage
6) Offset compensation
7) Reference traces marker
8) Mounting card
D 9) Intensifying reference trace
C 10) Change-over reference trace
11) Ref. traces intensity

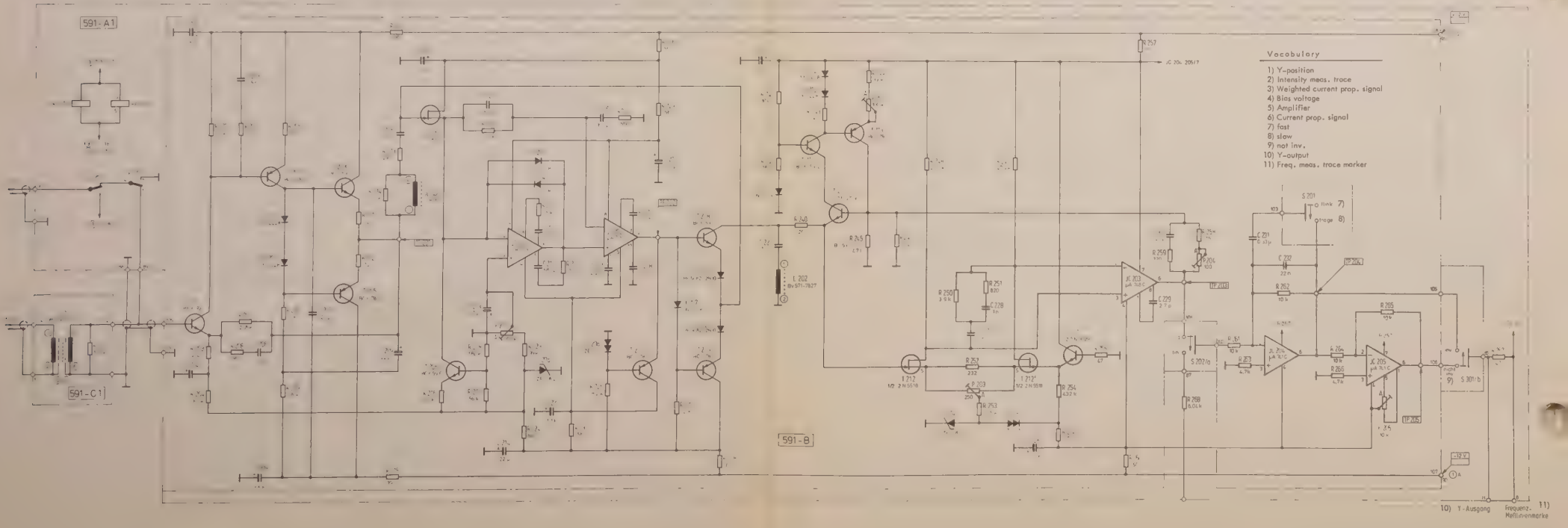
Horizontale Referenzlinien SGR-21
Horizontal reference traces BN 583



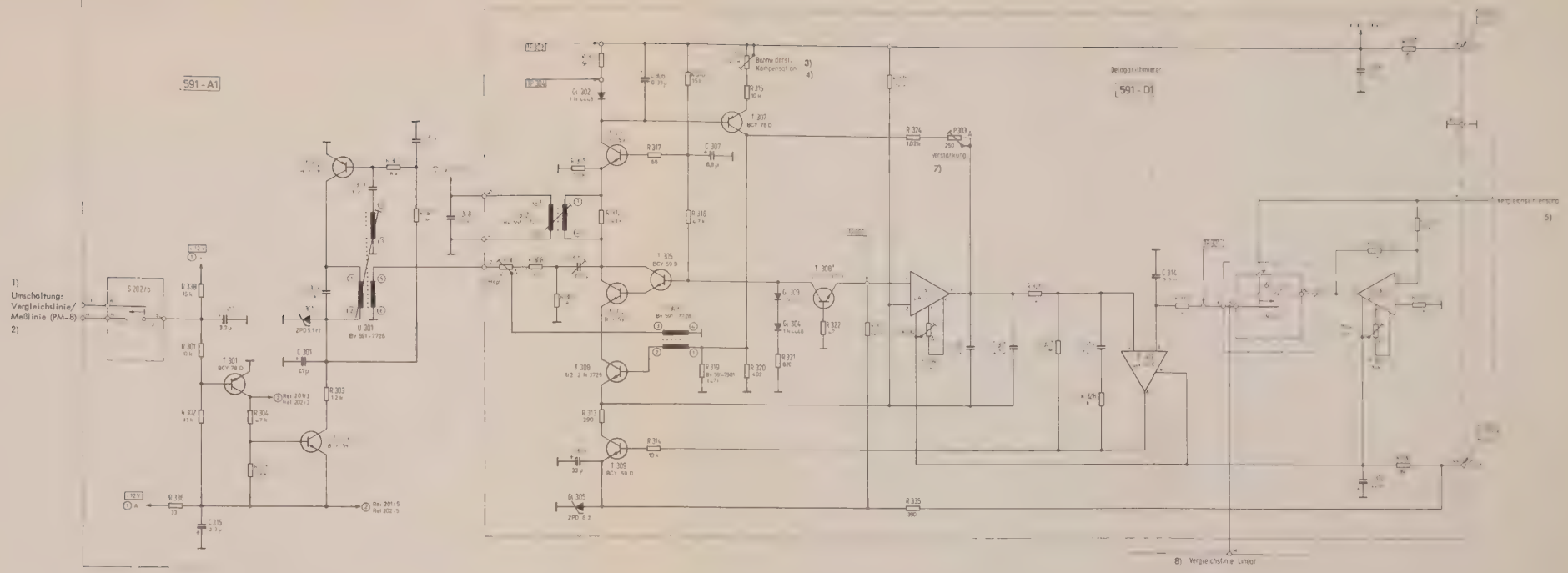
Y-Verstärker SGV-21
Y-amplifier BN 580



Verstärker SGV-22 ①
Amplifier BN 591

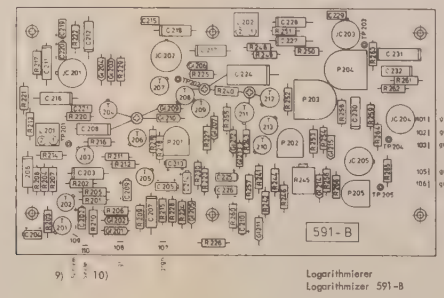


Logarithmierer SGV-22 ②
Logarithmizer BN 591

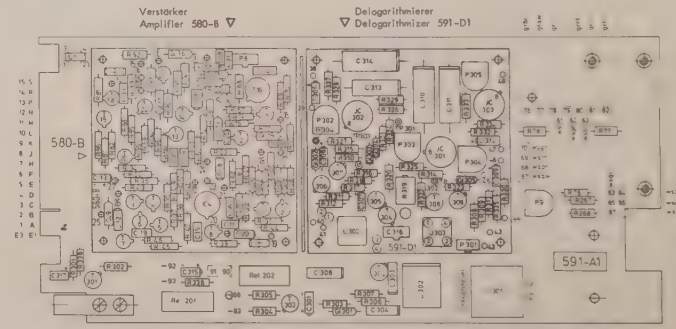


Vocabulary

1) Change-over
2) Reference trace
Measurement trace (PM-8)
3) Trimmer resistor rectilinear
4) Compensation
5) Reference trace voltage
6) Invert/not invert
7) Amplification
8) Reference trace linear
9) Screen
10) Inner conductor

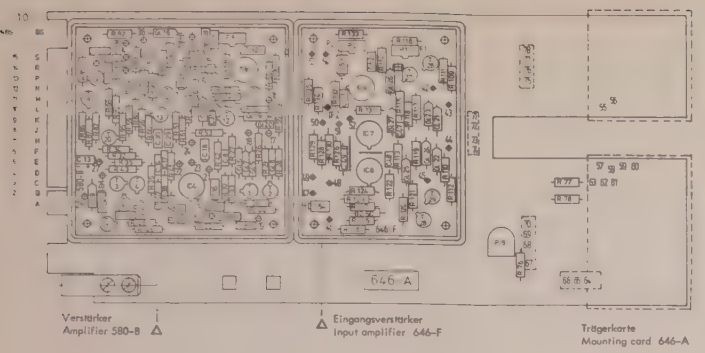


Logarithmierer
Logarithmizer 591-B



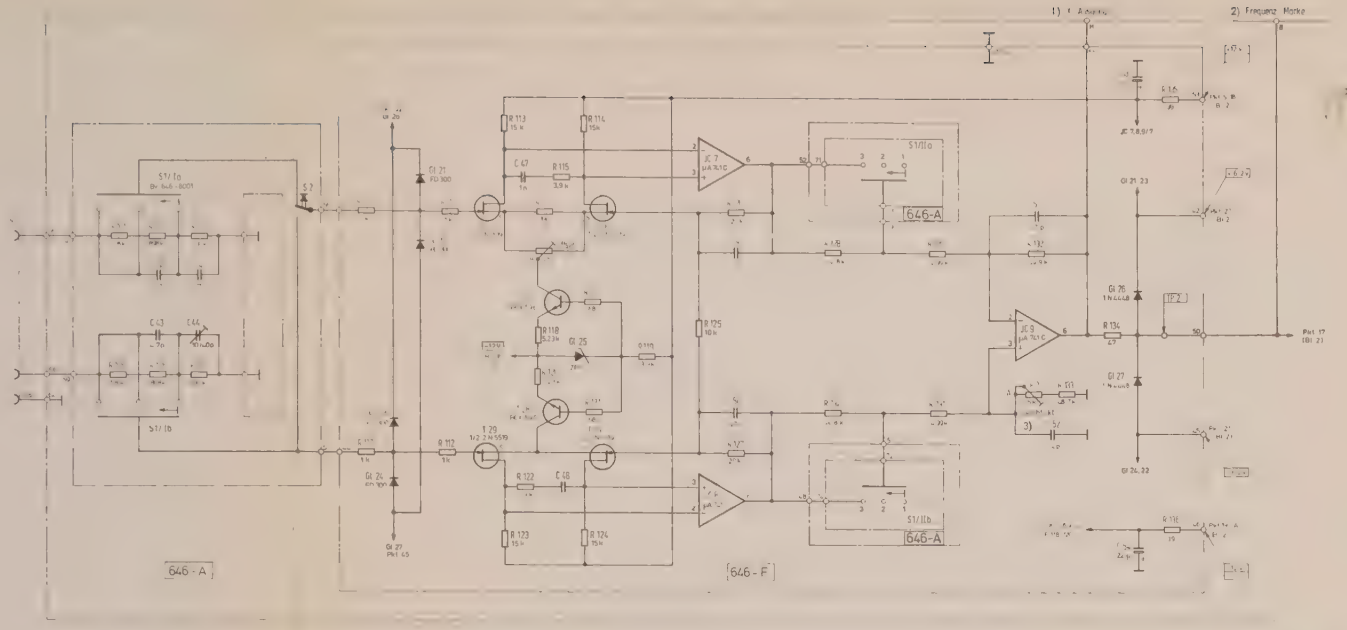
92 Schirm 9)
93 Seele 10)
88 Schirm 9)
89 Seele 10)

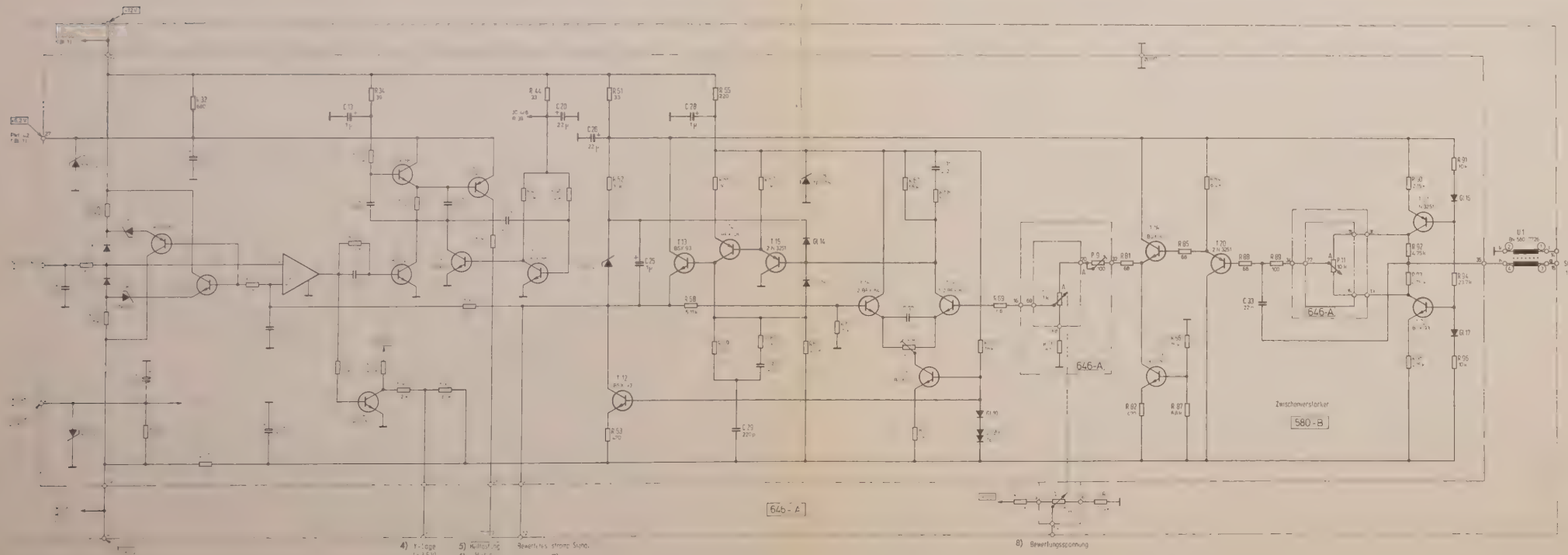
Trägerkarte
Mounting card 591-A1



Vocabulary

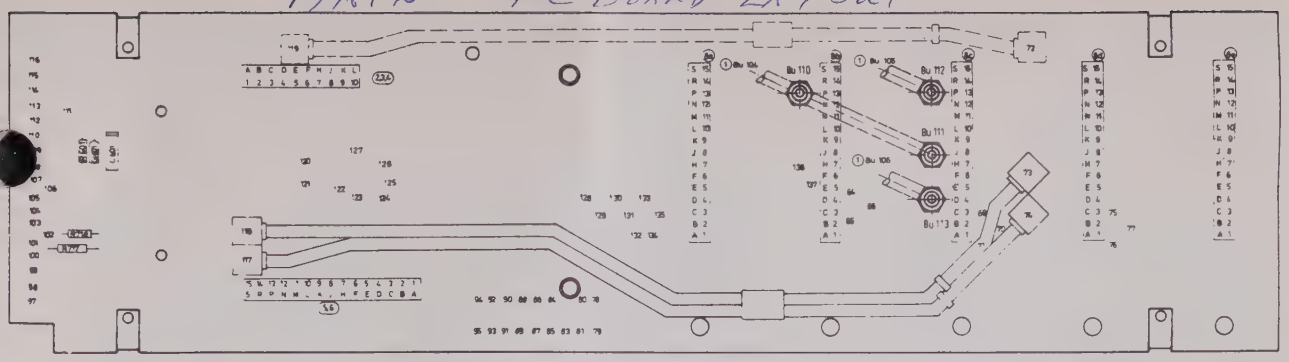
1) Y-output
2) Frequency marker
3) Common mode
4) Y-position
5) Intensity
6) Measurement trace
7) Weighted current proportional signal
8) Weighting voltage
9) Current proportional signal
10) NBS = Soldered side
BS = Components side





Y-Verstärker SGV-23
Y-amplifier BN 646

MAIN PC BOARD LAYOUT



Buchsenbelegungsplan (Connector arrangement plan)

Signalbezeichnung	Summe d. Verzw.	Anschlußpunkte innerhalb Prüfbereich	xxx	außerhalb Prüfbereich
+ 12 V	3	(2/3/4)L,10,(5/6)P	xxx	(1)92,(1)6,(7)112
	6	(8a)S,(8b)15,S,(8c)S,(8d)S,(8e)S	xxx	(1)86,(1)F
+ 5 V				
0 V Masse I	22	(2/3/4)B,2,(5/6)11,14,2,(8a)K,9,(8b)K,4,5,9,14,(8c)K,9,3,4,(8d)K,9,3,(8e)K,9,3	xxx	(1)83,84,85,(1)5,E
- 12 V	3	(2/3/4)C,3,(5/6)1	xxx	(1)94,(1)4,(7)113
	6	(8a)A,(8b)A,1,(8c)A,(8d)A,(8e)A	xxx	(1)78,(1)D

Stromversorgung (Power supply)

Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2		20	L	10	10		siehe Stromversorgung Bl. 2	+ 12 V	(2/3/4)
	frei NO CONNECTION	1	19	K	9	9	5	(8a)R,(8b)H,(8d)R,(8e)R xxx (7)109,	X-Ablenkspannung (±2,5 V)	
Xa-Ablenkspule	(6)L 601,(6)121 xxx	1	18	J	8	8	1	frei		
Xb-Ablenkspule	(6)L 601,(6)120 xxx	1	17	H	7	7	1	frei		
Masse II (ext)	(8c)14,(8a)14,(8e)14,(2/3/4)D,4,5,6	8	16	F	6	6	8	(2/3/4)F,D,4,5,(8c)14,(8d)14,(8e)14	Masse II (ext)	
Strooprop. Signal (16 kHz 1,0 V_{ss})	(8c)15,(8a)15,(8e)15 (gesch.über 119/72)	4	15	E	5	5	8	(2/3/4)F,D,4,6,(8c)14,(8d)14,(8e)14	Masse II (ext)	
Masse II (ext)	(8c)14,(8d)14,(8e)14,(2/3/4)F,4,5,6	8	14	D	4	4	8	(2/3/4)F,D,5,6,(8c)14,(8d)14,(8e)14	Masse II (ext)	
- 12 V	siehe Stromversorgung Bl. 2		13	C	3	3		siehe Stromversorgung Bl. 2	- 12 V	
Masse I	siehe Stromversorgung Bl. 2		12	B	2	2		siehe Stromversorgung Bl. 2	Masse I	
Helltastung Meßlinie	(8c)5,(8d)5,(8e)5, (gesch. über 118/73)(5/6)12	5	11	A	1	1	5	(5/6)13, (gesch. über 117/74) (8c)D,(8d)D,(8e)D	Helltastung Vergleichslinie	

COAX CONNECTION MAIN PC Bd

Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 400 V	(6)C 601,61 601/K xxx	1	30	S	15	15	1	frei		(5/6)
	frei SEE CURRENT.....	1	29	R	14	14		siehe Stromversorgung Bl. 2	Masse I	
+ 12 V	siehe Stromversorgung Bl. 2		28	P	13	13	5	(2/3/4)A,(8c)D,(8d)D,(8e)D	Helltastung Vergleichslinie	
Helligkeit	(6)P 603/A,(6)106 xxx	1	27	N	12	12	5	(2/3/4)A,(8c)5,(8d)5,(8e)5	Helltastung Meßlinie	
Helligkeit	(6)P 603/E,(6)105 xxx	1	26	M	11	11		siehe Stromversorgung Bl. 2	Masse I	
Helligkeit	(6)P 603/S,(6)134 xxx	1	25	L	10	10	1	xxx (6)122,(6)Rö 601/g2	Gitter 2	
Spaltenkontrast	(8a)P	2	24	K	9	9	1	xxx (6)123,(6)Rö 601/g4	Gitter 4	
Spaltenkontrast	(8a)N	2	23	J	8	8	1	frei		Rö 601
X - Helltastung	(8b)12	2	22	H	7	7	1	xxx (6)124,(6)Rö 601/g1	Gitter 1	
Dunkeltastung Vergleichslinie	(8b)11	2	21	F	6	6	1	frei		
Dunkeltastung Z-Modulation	(8a)6	2	20	E	5	5	1	xxx (6)125,(6)Rö 601/K	Kathode	
Dunkeltastung Meßlinie	(1)Bu 101/12,(1)29,(1)130 xxx (8c)10	2	19	D	4	4	4	(8a)F,(8d)F,(8e)F	Spaltenimpuls (normal)	
Dunkeltastung allg.	(1)Bu 101/7,(1)32,(1)135 xxx (8b)7,(8a)5	3	18	C	3	3	4	(8a)7,(8d)7,(8e)7	Spaltenimpuls (einstellbar)	
	frei	1	17	B	2	2		siehe Stromversorgung Bl. 2	Masse I	
Z - Modulation hell	(8a)3,(8c)7	3	16	A	1	1		siehe Stromversorgung Bl. 2	- 12 V	

Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15	1	frei		(8a)
X - Ablenkspannung (± 2,5 V)	(7)109 xxx (8b)H,(8d)R,(8e)R,(2/3/4)9	5	29	R	14	14	1	frei		
Spaltenkontrast	(5/6)K	2	28	P	13	13	1	frei		
Spaltenkontrast	(5/6)J	2	27	N	12	12	1	frei		
Frequenzmarke	(1)Bu 101/8,(1)26,(1)134 xxx	1	26	M	11	11	4	(8b)C,(8d)11,(8e)11	X - Ablenkspannung (dehnungsabh.)	
Vergleichslinien - Marke	xxx (8d)H,(8e)H	3	25	L	10	10	1	frei		
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
Bewertungsspannung	(8c)J	2	23	J	8	8	1	frei		
	frei	1	22	H	7	7	4	(8d)7,(8e)7,(5/6)3	Spaltenimpuls (einstellbar)	
Spaltenimpuls (normal)	(8d)F,(8e)F,(5/6)4	4	21	F	6	6	2	(5/6)E	Dunkeltastung Z - Modulation	
Steuerspannung	(7)113 xxx (8b)E,(8d)E,(8e)E	4	20	E	5	5	3	(8b)7,(5/6)C xxx (1)135,(1)32,(1)Bu 101/7	Dunkeltastung allg.	
	frei	1	19	D	4	4	4	(8d,e)4,(9b)8	Int.Ablenkung ein	
Meßlinien - Marke	(8c)8	2	18	C	3	3	3	(5/6)4, (8c)7	Z - Modulation hell	
	frei	1	17	B	2	2	1	frei		
V	siehe Stromversorgung Bl. 2		16	A	1	1	1	frei		

PCBd CONNECTOR

Hinweis: 1) I Summe der Verzweigungen innerhalb des Prüfbereiches
2) II Laufende Meßpunktnummern für den Kartenbett-Prüfautomat
3) (5) 3xxx (7) 1 bzw. (8) 55xxx Bu SK 1 bedeutet: Leitung verläßt bei (5) 3 bzw. (8) 55 den Prüfbereich und führt nach (7) bzw. Bu SK 1
4) (5) 3 bzw. (D) R bedeutet: Stromlaufplan 5 Pkt. 3 bzw. Karte D Pkt. R
5) Kontakt-Nr. A (Amphenol = AA (Valvo)

Note: 1) I Sum of the branches within the test sector
2) II Consecutive test point numbers for the card rack-automatic tester
3) (5) 3xxx (7) 1 or (8) 55xxx Bu SK 1 means : line leaves the test sector at (5) 3 or (8) 55 and passes towards (7) 1 or Bu SK 1
4) (5) 3 or (D) R means : circuit diagram 5 point 3 or card D point R
5) Contact-No. A (Amphenol = AA (Valvo)

Buchsenbelegung SG-2
Connectors arrangement BN 429

Fortsetzung (continued)

Fortsetzung (continued)

Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15		siehe Stromversorgung Bl. 2	+ 12 V	(8b)
	frei	1	29	R	14	14		siehe Stromversorgung Bl. 2	Masse I	
	frei	1	28	P	13	13	1	xxx (7)115	Speicherimpuls	
	frei	1	27	N	12	12	2	(5/6)H	X - Helltastung	
	frei	1	26	M	11	11	2	(5/6)F	Dunkeltastung Vergleichslinie	
	frei	1	25	L	10	10	1	frei		
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
X - Lage (± 2,5 V)	(7)108 xxx	1	23	J	8	8	1	frei		
X - Ablenkspannung (± 2,5 V)	(7)109 xxx (2/3/4)9,(9a)R,(8d)R,(8e)R	5	22	H	7	7	3	(5/6)C,(8a)5 xxx (1)135,(1)32,(1)Bu 101/7	Dunkeltastung allg.	
X - Ausgang	(1)Bu 102,(1)137 xxx	1	21	F	6	6	1	xxx (1)80,(1)Bu 109/2	Steuerimp.Relaisumschalter	
Steuerspannung	(7)113 xxx (8a)E,(8d)E,(8e)E	4	20	E	5	5		siehe Stromversorgung Bl. 2	Masse I	
X - Ablenkspannung intern	(7)116 xxx (8d,e)8	3	19	D	4	4		siehe Stromversorgung Bl. 2 xxx (1)64,(1)25,(1)Bu 101/14	Masse I	
X - Ablenkspannung (dehnungsabh.)	(8a)11,(8d)11,(8e)11	4	18	C	3	3	1	xxx (1)65,(1)26,(1)Bu 101/2	X - Ablenkspannung b	
Interne Ablenkung ein	(8a,d,e)4	4	17	B	2	2	1	xxx (1)66,(1)27,(1)Bu 101/9,(1)Bu 106/1	X - Ablenkspannung a	
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1		siehe Stromversorgung Bl. 2	- 12 V	

Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15	4	(8d)15,(8e)15 (gesch. über 72/119),(2/3/4)E	Stromprop. Signal	(8c)
	frei	1	29	R	14	14	8	(2/3/4)F,9,4,5,6,(8d)14,(8e)14 xxx	Masse II (ext)	
Masse III (ext)	(8d)P,(8e)P	3	28	P	13	13	1	frei		
Demod. HF - Signal	(8d)N	2	27	N	12	12	3	(8d)13,(8e)13	Bewertetes stromp. Signal	
Y - Vergleichslinien-Spannung	(1)Bu 101/13,(1)31,(1)82 xxx	1	26	M	11	11	1	frei		
Y-Vergleichslinienspg.(norm./invers)	(8d)17,(8e)17	3	25	L	10	10	2	(5/6)D xxx (1)Bu 101/12,(1)29,(1)130	Dunkeltastung Meßlinie	
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
Bewertungsspannung	(8a)J	2	23	J	8	8	2	(8a)C	Meßlinien - Marke	
Y - Signal	R 108 xxx	1	22	H	7	7	3	(5/6)A,(8a)3	Z - Modulation hell	
Abstimmanzeige PM - 8	Bu 101/13,(1)24,(1)138 xxx	1	21	F	6	6	1	xxx (7)98	Y - Lage (± 2,5 V)	
	frei	1	20	E	5	5	5	(8d)5,(8e)5 (gesch. über 73/118)(2/3/4)A,(5/6)12	Helltastung Meßlinie	
Helltastung Vergleichslinie	(5/6)12,(2/3/4)11,(gesch. über 74/117),(8d)D,(8e)D	5	19	D	4	4		siehe Stromversorgung Bl. 2	Masse I	
Umschaltung Vergleichslinie	(1)Bu 101/4,(1)22,21, xxx (8d)C,(8e)C	3	18	C	3	3		siehe Stromversorgung Bl. 2	Masse I	
Unstr. - Umsch. PM - 8	(1)Bu 101/1,(1)13,(1)70 xxx	1	17	B	2	2	1	xxx (1)69,(1)21,(1)Bu 101/3,(1)Bu 107/4	Y - Meßspannung b	
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1	1	xxx (1)71,(1)28,(1)Bu 101/10	Y - Meßspannung a	

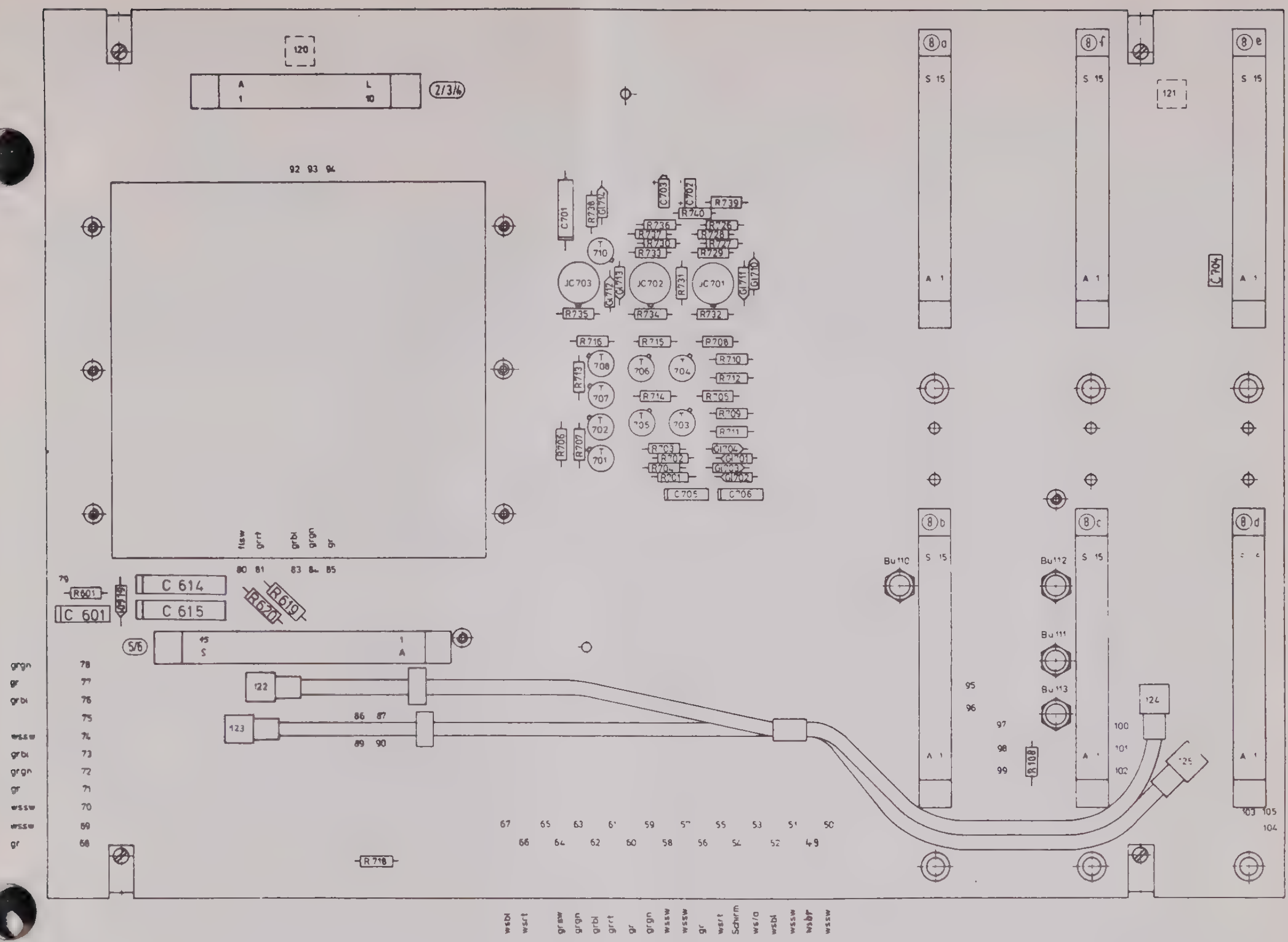
Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15	4	(8c)15,(8e)15 (gesch. über 72/119),(2/3/4)E	Stromprop. Signal	(8d)
X - Ablenkspannung (± 2,5 V)	(7)109 xxx (2/3/4)9,(9a),(8b)H,(8e)R	5	29	R	14	14	8	(2/3/4)F,9,4,5,6,(8c)14,(8e)14	Masse II	
Masse III (ext)	(8c)P,(8e)P	3	28	P	13	13	3	(8c)12,(8e)13	Bewertetes stromp. Signal	
Demod. HF - Signal	(8c)N	2	27	N	12	12	1	frei		
	frei	1	26	M	11	11	4	(8a)11,(8b)C,(8e)11	X - Ablenkspannung (dehnungsabh.)	
	frei	1	25	L	10	10	3	(8c)L,(8e)10	Y-Vergleichslinienspg.(norm./invers)	
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
	frei	1	23	J	8	8	1	frei		
Vergleichslinien - Marke	(8a)L,(8e)H	3	22	H	7	7	4	(8a)7,(8e)7,(5/6)3	Spalteninpuls (einstellbar)	
Spalteninpuls (normal)	(5/6)4,(8a)F,(8e)F	4	21	F	6	6	2	(8e)6 xxx (7)99	Y' - Lage (± 2,5 V)	
Steuerspannung	(7)113 xxx (8a)E,(8b)E,(8e)E	4	20	E	5	5	5	(8c)5,(8e)5,(gesch. über 73/118),(2/3/4)A,(5/6)12	Helltastung Meßlinie	
Helltastung Vergleichslinie	(2/3/4)11,(gesch.über 74/117),(5/6)13,(8c),(8e)D	5	19	D	4	4	4	(8a,e)4,(8b)8	Int.Ablenkung ein	
Umschaltung Vergleichslinie	(1)Bu 101/4,(1)22,(1)81 xxx (8c)C,(8e)C	3	18	C	3	3		siehe Stromversorgung Bl. 2	Masse I	
X - Ablenkspannung intern	(7)116 xxx (8e)B,(8b)8	3	17	B	2	2	1	xxx (1)75,(1)23,Bu 101/5	Y' - Meßspannung b	
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1	1	xxx (1)76,(1)30,Bu 101/6	Y' - Meßspannung a	

Signalbezeichnung	außerhalb Prüfbereich Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15	4	(8c)15,(8d)15,(gesch.über 72/119),(2/3/4)E	Stromprop. Signal	(8e)
X - Ablenkspannung (± 2,5 V)	(7)109, xxx (2/3/4)9,(8a)5,(9b),(8d)	5	29	R	14	14	8	(8c)14,(8d)14,(2/3/4)F,9,4,5,6	Masse II	
Masse III (ext)	(8c)P,(8d)P	3	28	P	13	13	3	(8c)12,(8d)13	Bewertetes stromp. Signal	
	frei	1	27	N	12	12	1	frei		
	frei	1	26	M	11	11	4	(8a)11,(8b)C,(8d)11	X - Ablenkspannung (dehnungsabh.)	
	frei	1	25	L	10	10	3	(8c)L,(8d)10	Y-Vergleichslinienspg.(norm./invers)	
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
	frei	1	23	J	8	8	1	frei		
Vergleichslinien - Marke	(8a)L,(8d)H	3	22	H	7	7	4	(8a)7,(8c)7,(5/6)3	Spalteninpuls (einstellbar)	
Spalteninpuls (normal)	(5/6)4,(8a)F,(8d)F	4	21	F	6	6	2	(8d)6 xxx (7)99	Y' - Lage ±3,5 V	
Steuerspannung	(7)113 xxx (8a)E,(8b)E,(8d)E	4	20	E	5	5	5	(8c)5,(8d)5,(gesch.über 73/118),(2/3/4)A,(5/6)12	Helltastung Meßlinie	
Helltastung Vergleichslinie	(2/3/4)11,(gesch.über 74/117),(5/6)13,(8c)D,(8)D,	5	19	D	4	4	4	(8a,d)4,(8b)8	Int.Ablenkung ein	
Umschaltung Vergleichslinie	(1)Bu 101/4,(1)22,(1)81, xxx (8c)C,(8d)C	3	18	C	3	3		siehe Stromversorgung Bl. 2	Masse I	
X - Ablenkspannung intern	(7)116 xxx (8b)D,(8d)8	3	17	B	2	2	1	frei		
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1	1	xxx C 704		

frei — free, No connection

gesch.über — coax cable

Buchsenbelegung SG-2
Connectors arrangement BN 429



Buchsenbelegungsplan (Connector arrangement plan)

Signal designation Signalbezeichnung	Sum of branches Summe d Verzw	Connection points within test area Anschlußpunkte innerhalb Prüfbereich	x x x	outside of test area außerhalb Prüfbereich
+ 12 V			xxx	(2/3/4)L,10,(5/6)P, (1)66,(1)6,(7)R 723
	7	(8a)S,(8b)15,S,(8c)S,(8d)S,(8e)S,(8f)S	xxx	(1)55,(1)F
+ 5 V				
0 V Masse I	25	(2/3/4)B,2,(5/6)11,14,2,(8a)K,9,(8b)K,4,5,9,14,(8c)K,9,3,4,(8d)K,9,3,(8e)K,9,3,(8f)K,9,3	xxx	(1)57,58,(1)5,E
- 12 V			xxx	(2/3/4)C,3,(5/6)1, (1)52,(1)4,(7)R 740
	7	(8a)A,(8b)A,1,(8c)A,(8d)A,(8e)A,(8f)A	xxx	(1)67,(1)D

Stromversorgung (Power supply)

Signal designation Signalbezeichnung	Connection points (outside of test area / within test area) außerhalb Prufbereich Anschlußpunkte innerhalb Prufbereich	I	II			II	I	Connection points (within test area / outside of test area) innerhalb Prufbereich Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Edge connector Leiste
+ 12 V	siehe Stromversorgung Bl. 2 xxx	1	20	L	10	10		xxx siehe Stromversorgung Bl. 2	+ 12 V	(2/3/4)
	frei	1	19	K	9	9	1	xxx (7)JC 701/2, (8a)R,(8b)H,(8d)R,(8e)R,(8f)R	X-Ablenkspannung (± 2,5 V)	
Xa-Ablenkspule	(6)L 601,(6)94 xxx	1	18	J	8	8	1	frei		
Xb-Ablenkspule	(6)L 601,(6)93 xxx	1	17	H	7	7	1	frei		
Masse II (ext)	(8c)14,(8a)14,(8e)14,(2/3/4)D,4,5,6,(8f)14	9	16	F	6	6	9	(2/3/4)F,D,4,5,(8c)14,(8d)14,(8e)14,(8f)14	Masse II (ext)	
Stromprop. Signal (15 kHz 1,0 V_{ss})	xxx (8c)15,(8d)15,(8e)15,(8f)15,(gesch.über 120/121)	5	15	E	5	5	9	(2/3/4)F,D,4,6,(8c)14,(8d)14,(8e)14,(8f)14	Masse II (ext)	
Masse II (ext)	(8c)14,(8d)14,(8e)14,(8f)14,(2/3/4)F,4,5,6	9	14	D	4	4	9	(2/3/4)F,D,5,6,(8c)14,(8e)14,(8f)14	Masse II (ext)	
- 12 V	siehe Stromversorgung Bl. 2 xxx	1	13	C	3	3		xxx siehe Stromversorgung Bl. 2	- 12 V	
Masse I	siehe Stromversorgung Bl. 2		12	B	2	2		siehe Stromversorgung Bl. 2	Masse I	
Helltastung Meßlinie	(8c)5,(8d)5,(8e)5,(8f)5,(g.ü.124/122),(5/6)12	6	11	A	1	1	6	(5/6)13,(gesch.über 125/123),(8c)D,(8d)D,(8e)D,(8f)D	Helltastung Vergleichslinie	

Fortsetzung (continued)

Signalbezeichnung	außerhalb Prüfbereich **Anschlußpunkte** innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich **Anschlußpunkte** außerhalb Prüfbereich	Signalbezeichnung	Leiste (5/6)
+ 400 V	(6)C 603,G1 601/K xxx	1	30	S	15	15	1	frei		
	frei	1	29	R	14	14		siehe Stromversorgung Bl. 2	Masse I	
+ 12 V	siehe Stromversorgung Bl. 2 xxx	1	28	P	13	13	6	(2/3/4)1,(gesch.über 125/123),(8c)D,(8d)D,(8e)D,(8f)D,	Helltastung Vergleichslinie	
Helligkeit	(6)P 603/E,(6)77 xxx	1	27	N	12	12	6	(2/3/4)A,(gesch.über 124/122),(8c)5,(8d)5,(8e)5,(8f)5	Helltastung Meßlinie	
Helligkeit	(6)P 603/A,(6)78 xxx	1	26	M	11	11		siehe Stromversorgung Bl. 2	Masse I	
Helligkeit	(6)P 603/S,(6)76 xxx	1	25	L	10	10	1	xxx (6)80,(6)Rö 601/g2	Gitter 2	
Spaltenkontrast	(8a)P	2	24	K	9	9	1	xxx (6)81,(6)Rö 601/g4	Gitter 4	
Spaltenkontrast	(8a)N	2	23	J	8	8	1	frei	Rö 601	
X - Helltastung	(8b)12	2	22	H	7	7	1	xxx (6)82,(6)Rö 601/g1	Gitter 1	
Dunkeltastung Vergleichslinie	(8b)11	2	21	F	6	6	1	frei		
Dunkeltastung Z-Modulation	(8a)6	2	20	E	5	5	1	xxx (6)83,(6)Rö 601/K	Kathode	
Dunkeltastung Meßlinie	(1)Bu 101/12,(1)29,(1)86 xxx (8c)10	2	19	D	4	4	5	(8a)F,(8d)F,(8e)F,(8f)F	Spaltenimpuls (normal)	
Dunkeltasung allg.	(1)Bu 101/7,(1)32,(1)87 xxx (8b)7 ,(8a)5	3	18	C	3	3	5	(8a)7,(8d)7,(8e)7,(8f)7	Spaltenimpuls (einstellbar)	
	frei	1	17	B	2	2		siehe Stromversorgung Bl. 2	Masse I	
Z - Modulation hell	(8a)3,(8c)7	3	16	A	1	1	1	xxx siehe Stromversorgung Bl. 2	- 12 V	

Signalbezeichnung	außerhalb Prüfbereich **Anschlußpunkte** innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich **Anschlußpunkte** außerhalb Prüfbereich	Signalbezeichnung	Leiste (8a)
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15	1	frei		
X - Ablenkspannung (±2,5 V)	(7)JC 701/2, (8b)H,(8d)R,(8e)R,(8f)R,(2/3/4)9 xxx	1	29	R	14	14	1	frei		
Spaltenkontrast	(5/6)K	2	28	P	13	13	1	frei		
Spaltenkontrast	(5/6)J	2	27	N	12	12	1	frei		
Frequenzmarke	(1)Bu 101,9,(1)26,(1)53 xxx (8f)M	2	26	M	11	11	5	(8b)C,(8d)11,(8e)11,(8f)11	X - Ablenkspannung (dehnungsabh.)	
Vergleichslinien - Marke	xxx (8d)H,(8e)H,(8f)H	4	25	L	10	10	1	frei		
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
Bewertungsspannung	(8c)J	2	23	J	8	8	1	frei		
	frei	1	22	H	7	7	5	(8d)7,(8e)7,(8f)7,(5/6)3	Spaltenimpuls (einstellbar)	
Spaltenimpuls (normal)	(8d)F,(8e)F,(8f)F,(5/6)4	5	21	F	6	6	2	(5/6)E	Dunkeltastung Z - Modulation	
Steuerspannung	(7)R 730,G1 712/K (8b)E,(8d)E,(8e)E,(8f)E xxx	1	20	E	5	5	3	(8b)7,(5/6)C xxx (1)87,(1)32,(1)Bu 101/7	Dunkeltastung allg.	
	frei	1	19	D	4	4	5	(8b)8,(8d,e)4,(8f)4	Int. Ablenkung ein	
Meßlinien - Marke	(8c)8	2	18	C	3	3	3	(5/6)A,(8c)7	Z - Modulation hell	
	frei	1	17	B	2	2	1	frei		
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1	1	frei		

Signalbezeichnung	außerhalb Prüfbereich **Anschlußpunkte** innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich **Anschlußpunkte** außerhalb Prüfbereich	Signalbezeichnung	Leiste (8b)
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15		siehe Stromversorgung Bl. 2	+ 12 V	
	frei	1	29	R	14	14		siehe Stromversorgung Bl. 2	Masse I	
	frei	1	28	P	13	13	1	xxx (7)R 736,(7)G1 714/K	Speicherimpuls	
	frei	1	27	N	12	12	2	(5/6)H	X - Helltastung	
	frei	1	26	M	11	11	2	(5/6)F	Dunkeltastung Vergleichslinie	
	frei	1	25	L	10	10	1	frei		
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
X - Lage	(7)R 715,(7)T 707/B,(7)T 708/B xxx	1	23	J	8	8	1	frei		
X - Ablenkspannung (±2,5 V)	(7)JC 701/2, (2/3/4)9,(8a)R,(8d)R,(8e)R,(8f)R xxx	1	22	H	7	7	3	(5/6)C,(8a)5 xxx (1)32,(1)87,(1)Bu 101/7	Dunkeltastung allg.	
X - Ausgang	(1)Bu 102,(1)95 xxx	1	21	F	6	6	1	xxx (1)56,(1)Bu 109/2	Steuerter.Relaisumschalter	
Steuerspannung	(7)R 730,G1 712/K, (8a)E,(8d)E,(8e)E,(8f)E xxx	1	20	E	5	5		siehe Stromversorgung Bl. 2	Masse I	
X - Ablenkspannung intern	(7)JC 703/6,(7)C 707, (8d ,e,f,)8 xxx	1	19	D	4	4		siehe Stromversorgung Bl. 2	Masse I	
X - Ablenkspannung (dehnungsabh.)	(8a)11,(8d)11,(8e)11,(6f)11	5	18	C	3	3	1	xxx (1)20,(1)90,(1)Bu 101/2	X - Ablenkspannung b	
Interne Ablenkung ein	(8a,d,e,f)4	5	17	B	2	2	1	xxx (1)27,(1)99,(1)Bu 101/9,(1)Bu 109/1	X - Ablenkspannung a	
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1		siehe Stromversorgung Bl. 2	- 12 V	

Signalbezeichnung	außerhalb Prüfbereich **Anschlußpunkte** innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich **Anschlußpunkte** außerhalb Prüfbereich	Signalbezeichnung	Leiste (8c)
+ 12 V	siehe Stromversorgung Bl. 2		30	S	15	15	5	(2/3/4)E,(8d)15,(8e)15,(8f)15,(gesch.über 120/121)	Stromprop. Signal	
	frei	1	29	R	14	14	9	(2/3/4)F,D,4,5,6,(8d)14,(8e)14,(8f)14	Masse II (ext)	
Masse III (ext)	(8d)P,(8e)P,(8f)P	4	28	P	13	13	1	frei		
Demod. HF - Signal	(8d)N	2	27	N	12	12	4	(8d)12,(8e)12,(8f)12	Bewertetes stromp. Signal	
Y - Vergleichslinien-Spannung	(1)Bu 101/13,(1)31,(1)60 xxx	1	26	M	11	11	1	frei		
Y-Vergleichslinien-Spannung(norm./invers	(8d)10,(8.)10,(8f)10	4	25	L	10	10	2	(5/6)D xxx (1)Bu 101/12,(1)29,(1)86	Dunkeltastung Meßlinie	
Masse I	siehe Stromversorgung Bl. 2		24	K	9	9		siehe Stromversorgung Bl. 2	Masse I	
Bewertungsspannung	(8a)J	2	23	J	8	8	2	(3a)C	Meßlinien - Marke	
Y - Signal	R 108 xxx	1	22	H	7	7	3	(8a)3,(5/6)A	Z - Modulation hell	
Abstimmanzeige FM - 8	(1)Bu 101/11,(1)24,(1)49 xxx	1	21	F	6	6	1	xxx (7)C 705,G1 701/A,G1 704/K	Y - Lage (±3,5 V)	
frei		1	20	E	5	5	6	(8d)5,(8e)5,(8f)5,(gesch.über 124/122),(2/3/4)A,(5/6)12	Helltastung Meßlinie	
Helltastung Vergleichslinie	(5/6)13,(2/3/4)1,(gesch.über125/123),(8d)D,(8e)D,(8f)D	6	19	D	4	4		siehe Stromversorgung Bl. 2	Masse I	
Umschaltung Vergleichslinie	(1)Bu 101/4,(1)27,49 xxx (3d)L,(8e)C,(8f)C	4	18	C	3	3		siehe Stromversorgung Bl. 2	Masse I	
Instr. - Umsch. FM - 8	(1)Bu 101/1,(1)13,(1)63 xxx	1	17	B	2	2	1	xxx (1)102,(1)21,(1)Bu 101/3,(1)Bu 107/4	Y - Meßspannung b	
- 12 V	siehe Stromversorgung Bl. 2		16	A	1	1	1	xxx (1)101,(1)28,(1)Bu 101/10,(1)Bu 107/5	Y - Meßspannung a	

Buchsenbelegung SG-3
Connectors arrangement BN 593

Fortsetzung (continued)

Signalbezeichnung	außerhalb Prüfbereich	Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich	Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2			30	S	15	15	5	(2/3/4)E, (8c)14, (8a)15, (8f)15, (gesch. über 120/121)		Stromprop. Signal	(8d)
X - Ablenkspannung (± 2,5 V)	(7) MC 701/2, (2/3/4)9, (8a)P, (8b)H, (8e)R, (8f)R xxx		1	29	R	14	14	9	(2/3/4)F, D, 4, 5, 6, (8c)14, (8e)14, (8)14		Masse II	
Masse III (ext)	(8c)P, (8a)P, (8f)P		4	28	P	13	13	4	(8c)12, (8e)13, (8f)13		Bewertetes stromp. Signal	
Demod. HF - Signal	(8c)H		2	27	N	12	12	1	frei			
	frei		1	26	M	11	11	5	(8a)11, (8b)C, (8e)11, (8f)11		X - Ablenkspannung (dehnungsabh.)	
	frei		1	25	L	10	10	4	(8c)L, (8a)10, (8f)10		Y-Vergleichslinienspannung (norm./invers	
Masse I	siehe Stromversorgung Bl. 2			24	K	9	9		siehe Stromversorgung Bl. 2		Masse I	
	frei		1	23	J	8	8	1	frei			
Vergleichslinien - Marke	(8a)L, (8e)H, (8f)H		4	22	H	7	7	5	(8a)7, (8e)7, (8f)7, (5/6)3		Spaltenimpuls (einstellbar)	
Spaltenimpuls (normal)	(5/6)4, (8a)F, (8e)F, (8f)F		5	21	F	6	6	1	xxx (8e)6, (8f)6, (7)C 706, G1 702/A, G1 703/K		Y1 - Lage (± 3,5 V)	
Steuerspannung	(7)G1 712/K, R 730, (8a)E, (8b)E, (8e)E, (8f)E xxx		1	20	E	5	5	6	(8c)5, (8e)5, (8f)5, (gesch. über 124/122)(2/3/4)A, (5/6)12		Helltastung Meßlinie	
Helltastung Vergleichslinie	(2/3/4)1, (gesch. über 125/123), ((5/6)13, (8c)D, (8e)D, (8f)D		6	19	D	4	4	5	(8b)8, (8a, e, f)4		Int. Ablenkung ein	
Umschaltung Vergleichslinie	(1)Bu 101/4, (1)22, (1)81 xxx (8c)C, (8e)C, (8f)C		4	18	C	3	3		siehe Stromversorgung Bl. 2		Masse I	
X - Ablenkspannung intern	(7) JC 703/6, (7)C 701, (8b)D, (8e, f)8 xxx		1	17	B	2	2	1	xxx (1)103, (1)23, Bu 101/5		Y1 - Meßspannung b	
- 12 V	siehe Stromversorgung Bl. 2			16	A	1	1	1	xxx (1)104, (1)30, Bu 101/6		Y1 - Meßspannung a	

Signalbezeichnung	außerhalb Prüfbereich	Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich	Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2			30	S	15	15	5	(8c)15, (8d)15, (8f)15, (gesch. über 120/121, (2/3/4)E		Stromprop. Signal	(8e)
X - Ablenkspannung (± 2,5 V)	(7) JC 701/2, (2/3/4)9, (8a)R, (8b)H, (8d)R, (8f)R xxx		1	29	R	14	14	9	(8c)14, (8d)14(8f)14, (2/3/4)F, D, 4, 5, 6		Masse II	
Masse III (ext)	(8c)P, (8d)P, (8f)P		4	28	P	13	13	4	(8c)12, (8d)13, (8f)13		Bewertetes stromprop. Signal	
	frei		1	27	N	12	12	1	frei			
	frei		1	26	M	11	11	5	(8a)11, (8b)C, (8d)11, (8f)11		X - Ablenkspannung (dehnungsabh.)	
	frei		1	25	L	10	10	4	(8c)L, (8d)10, (8f)10		X-Vergleichslinienspannung (norm./invers	
Masse I	siehe Stromversorgung Bl. 2			24	K	9	9		siehe Stromversorgung Bl. 2		Masse I	
	frei		1	23	J	8	8	1	frei			
Vergleichslinien - Marke	(8a)L, (8d)H, (8f)H		4	22	H	7	7	5	(8a)7, (8d)7, (8f)7, (5/6)3		Spaltenimpuls (einstellbar)	
Spaltenimpuls (normal)	(8a)F, (8d)F, (8f)F, (5/6)4		5	21	F	6	6	1	xxx (8d)6, (8f)6, (7)C 706, G1 702/A, G1 703/K		Y1 - Lage ± 3,5 V	
Steuerspannung	(7)G1 712/K, R 730, (8a)E, (8b)E, (8d)E, (8f)E xxx		1	20	E	5	5	6	(8c)5, (8d)5, (8f)5, (gesch. über 124/122)(2/3/4)A, (5/6)12		Helltastung Meßlinie	
Helltastung Vergleichslinie	(2/3/4)1, (gesch. über 125/123), (5/6)13, (8c)D, (8d)D, (8f)D		6	19	D	4	4	5	(8b)8, (8a)4, (8d)4, (8f)4		Int. Ablenkung ein	
Umschaltung Vergleichslinie	(1)Bu 101/4, (1)22, (1)59 xxx (8c)C, (8d)C, (8f)C		4	18	C	3	3		siehe Stromversorgung Bl. 2		Masse I	
X - Ablenkspannung intern	(7) JC 703/6, (7)C 701, (8b)D, (8d, f)8 xxx		1	17	B	2	2	1	frei			
- 12 V	siehe Stromversorgung Bl. 2			16	A	1	1	1	frei			

Signalbezeichnung	außerhalb Prüfbereich	Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich	Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste
+ 12 V	siehe Stromversorgung Bl. 2			30	S	15	15	5	(8c, d, e)15, (gesch. über 121/120), (2/3/4)E		Stromprop. Signal	(8f)
X - Ablenkspannung (± 2,5 V)	(7) JC 701/2, (2/3/4)9, (8b)H, (8a, d, e)R xxx		1	29	R	14	14	9	(8c, d, e)14, (2/3/4)F, D, 4, 5, 6		Masse II	
Masse III (ext)	(8c, d, e)P		4	28	P	13	13	4	(8c)12, (8d, e)13		Bewertetes stromprop. Signal	
	frei		1	27	N	12	12	1	frei			
Frequenzmarke	(1)Bu 101, 8, (1)26, (1)53 xxx (8a)H		2	26	M	11	11	5	(8a)11, (8b)C, (8d, e)11		X - Ablenkspannung (dehnungsabh.)	
	frei		1	25	L	10	10	4	(8c)L, (8d, e)10		Y-Vergleichslinienspannung (norm./ invers	
Masse I	siehe Stromversorgung Bl. 2			24	K	9	9		siehe Stromversorgung Bl. 2		Masse I	
	frei		1	23	J	8	8	1	frei			
Vergleichslinien - Marke	(8a)L, (8d, e)H		4	22	H	7	7	5	(8a, d, e)7, (5/6)3		Spaltenimpuls (einstellbar)	
Spaltenimpuls (normal)	(8a, d, e)F, (5/6)4		5	21	F	6	6	1	xxx (7)C 706, G1 702/A, G1 703/K, (8d, e)6		Y1 - Lage ± 3,5 V	
Steuerspannung	(7)R 730, G1 712/K, (8a, b, d, e)E xxx		1	20	E	5	5	6	(8c, d, e)5, (gesch. über 124/122), (2/3/4)A, (5/6)12		Helltastung Meßlinie	
Helltastung Vergleichslinie	(2/3/4)1, (5/6)13, (gesch. über 123/125), (8c, d, e)D		6	19	D	4	4	5	(8a)4, (8b)8, (8d, e)4		Int. Ablenkung ein	
Umschaltung Vergleichslinie	(1)Bu 101/4, (1)22, (1)59 xxx (8c, d, e)C		4	18	C	3	3		siehe Stromversorgung Bl. 2		Masse I	
X - Ablenkspannung intern	(7) JC 703/6, (7)C 701, (8b)D, (8d, e)8 xxx		1	17	B	2	2	1	frei			
- 12 V	siehe Stromversorgung Bl. 2			16	A	1	1	1	frei			

Buchsenbelegung SG-3
Connectors arrangement BN 593

Belastbarkeit und Größenbezeichnung der Widerstände nach DIN 44050 ff.
Loading capability and value designation of resistors corresponding to German standard DIN 44050 ff.

Übersetzungstabelle (List of translated forms)

Abgleichwert	Alignment value
Ablenkeinheit	Deflection unit
Ablenkspannung (dehnungsabhängig)	Deflection voltage (MAG dependent)
Ablenkspule	Deflection coil
Anschlußpunkte	Connection points
Abstimmanzeige	Tuning indicator
Ausgang	Output
außerhalb Prüfbereich	Outside of test area
Achsl. (Achslänge)	Shaft length
Bewertungsspannung	Weighting voltage
Buchse	Connector
Drahtdrehwid.	Wire wound potentiometer
Drahtwid.	Wire wound resistor
Dunkeltastung allgemein	Blanking general
Dunkeltastung Meßlinie	Blanking measurement trace
Dunkeltastung Vergleichslinie	Blanking reference trace
Dunkeltastung Z-Modulation	Blanking Z-modulation
Elko	Electrolytic capacitor
frei	Free
Frequenzmarke	Frequency marker
Gleichrichter	Rectifier
Gitter	Screen
hartverg. (hartvergoldet)	Gold plated
Helligkeit	Intensity
Helltastung Meßlinie	Intensify measuring trace
Helltastung Vergleichslinie	Intensify reference trace
Innerhalb Prüfbereich	Within test area
Instr.-Umsch.	Meter change-over
Int. Ablenkung "ein"	Int. deflection "ON"
Kf-Kond.	Metalized plastic capacitor
Ker.-Kond.	Ceramic capacitor
Knopffarbe: grau	Knob color: grey
Leiste	Edge connector
Masse	Ground
Meßlinien-Marke	Measuring trace marker
Meßspannung	Measuring voltage
Netzfilter	a.c. line filter
Netztrafo	Power transformer
Normregler	Standardized stabilizer
Ringkern	Toroidal core
Röhre	Tube
Schalter, Schaltstellg. m. Anschlag, m. kleineren Drehmoment	Switch, switch position with stop , with low torque
Schichtwid.	Film resistor
Schichtdrehwid.	Adjustable film resistor
Schmelzeinsatz	Fuse element
siehe Stromversorgung	See power supply
Signalbezeichnung	Signal designation
Spaltenimpuls (normal)	Vertical bar pulse (normal)
Spaltenimpuls (einstellbar)	Vertical bar pulse (adjustable)
Spaltenkontrast	Bar contrast
Speicherimpuls	Store pulse
Spule	Coil
Hp-Sonderqualität	HP-special quality
Stecker	Plug
Steuerimp. Relaisumschalter	Control pulse relay change-over
Steuerspannung	Control voltage
Stromprop. Signal	Current proportional signal
Summe der Verzweigung	Sum of branches
Vergleichslinien-Marke	Reference trace marker
Vergleichslinienspannung	Reference trace voltage
Übertrager	Transformer
Umschaltung Vergleichslinie	Change-over reference trace

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 101	1	Drahtwid.	0,47 Ω / 10 %		SKA - 1 / RIG
R 102	1	Drahtwid.	0,47 Ω / 10 %		SKA - 1 / RIG
R 103	1	Schichtwid.	10 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 104	1	Schichtwid.	10 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 105	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 106	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 107	1	Schichtwid.	9,31 kΩ / 0,5 % / Tk 50 /0207		WN 18 / 4 / 1
R 108	1	Schichtwid.	4,99 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
C 101	1	Elko	2200 µF / -10 +50 % / 40 V -		WN 110 / 5 / 20
C 102	1	Elko	2200 µF / -10 +50 % / 40 V -		WN 110 / 5 / 20
C 103	1	Elko	220 µF / -10 +50 % / 16 V -		WN 110 / 5 / 40
C 104	1	Elko	220 µF / -10 +50 % / 16 V -		WN 110 / 5 / 40
G1 101	1	Gleichrichter	B 40 C 3200 / 2200		
G1 102	1	Gleichrichter	B 40 C 3200 / 2200		
G1 103	1	Diode	1 N 4003		
G1 104	1	Diode	1 N 4003		
T 101	1	Transistor	2 N 3055		
T 102	1	Transistor	2 N 3055		
T 103	1	Transistor	BCY 59 D		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
U 101	1	Netztrafo		Bv. 429 - 7702	
	1	Netzfilter	1,5 kV	BN 427 / 42	
	2	Norm-regler	12 V	BN 427 / 12	
S 101	1	Schalter			WN 13 / 2 / 3
Si 101	1	Ge - Schmelzeins.	T 3 D		WN 115 / 2 / 1
St 114	1	Stecker			C WN 119 / 8 / 3
Bu 101	1	Buchse	14 polig		WN 119 / 5 / 5
Bu 102	1	Buchse	2 polig		WN 119 / 1 / 9
Bu 103	1	Buchse	2 polig		WN 119 / 1 / 9
Bu 104	1	Buchse	Uni 9 F		WN 119 / 9 / 4
Bu 105	1	Buchse	Uni 9 F		WN 119 / 9 / 4
Bu 106	1	Buchse	Uni 9 F		WN 119 / 9 / 4
Bu 107	1	Buchse	5 polig		WN 119 / 7 / 2
Bu 108	1	Buchse	5 polig		WN 119 / 7 / 2
Bu 109	1	Buchse	3 polig		WN 119 / 7 / 1
Bu 110	1	Buchse B			2 WN 119 / 8 / 4
Bu 111	1	Buchse B			2 WN 119 / 8 / 4
Bu 112	1	Buchse B			2 WN 119 / 8 / 4
Bu 113	1	Buchse B			2 WN 119 / 8 / 4
Bu 114	1	Buchse	00 - 1695.00 / 4		

Netzteil SG-2/BN 429 ①
Power supply SG-3/BN 593 ①

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 201	1	Schichtwid.	1 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 202	1	Schichtwid.	1 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 203	1	Schichtwid.	470 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 208	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 209	1	Schichtwid.	68 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 210	1	Schichtwid.	56 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 211	1	Schichtwid.	47 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 212	1	Schichtwid.	56 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 213	1	Schichtwid.	10 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 214	1	Schichtwid.	10 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 215	1	Schichtwid.	1,2 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 216	1	Schichtwid.	1,2 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 217	1	Schichtwid.	1,2 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 218	1	Schichtwid.	1,2 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 219	1	Schichtwid.	1 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 220	1	Schichtwid.	ca. 100 M / 5 % / Kl. 2 / 0309	WN 18 / 3 / 1	Abgleichwert
R 221	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 222	1	Schichtwid.	22 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 223	1	Schichtwid.	56 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 224	1	Schichtwid.	10 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 225	1	Schichtwid.	10 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 226	1	Schichtwid.	56 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 227	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 228	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 229	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 230	1	Schichtwid.	390 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 231	1	Schichtwid.	680 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 232	1	Schichtwid.	560 M / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 233	1	Schichtwid.	56 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 234	1	Schichtwid.	1 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 235	1	Schichtwid.	1 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 236	1	Schichtwid.	1,5 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
P 201	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
C 201	1	Elko	220 µF / +50 -10 % / 16 V -		WN 110 / 5 / 40
C 202	1	Elko	220 µF / +50 -10 % / 16 V -		WN 110 / 5 / 40
C 203	1	Kf - Kond.	22 nF / 1 % / 630 V -		WN 110 / 3 / 3
C 204	1	Kf - Kond.	10 µF / 20 % / 63 V -		B 32110 - F 9106-M
C 205	1	Kf - Kond.	120 nF / 1 % / 630 V -		CKS - Schwamm $d_{max.}$ 27,5 mm
C 206	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 207	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 208	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 209	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 210	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 211	1	Ker. Kond.	100 pF / 2 % / N 150		WN 110 / 2 / 9

Y-Ablenkgenerator und Speicherschalter SG-2/BN 429 ②
Y-deflection generator and store switch SG-3/BN 593 ②

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
C 212	1	Kf - Kond.	0,1 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 213	1	Kf - Kond.	0,1 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 214	1	Elko	100 µF / +50 -10 % / 16 V =		WN 110 / 5 / 40
C 215	1	Elko	100 µF / +50 -10 % / 16 V =		WN 110 / 5 / 40
Ü 201	1	Übertrager		0429 7726 00	
L 201	1	Spule	1 µH		B 82501 - A - C 1
L 202	1	Spule	80 µH		B 82501 - C - C 13
L 203	1	Spule	80 µH		B 82501 - C - C 13
T 201	1	Transistor	TIP 33 A mit Isolierscheibe		
T 202	1	Transistor	BSX 93		
T 203	1	Transistor	2 N 3251		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
T 204	1	Transistor	2 N 2219		
T 205	1	Transistor	2 N 2905		
T 206	1	Transistor	BSX 93		
T 207	1	Transistor	2 N 3251		
T 208	1	Transistor	BSX 93		
	3	Ringkern	B 64290 - A 0038 - X 038		Siemens
G1 201	1	Diode	1 N 4448		
G1 202	1	Z - Diode	ZD 6,2		
G1 203	1	Z - Diode	ZD 6,2		
G1 204	1	Diode	BAY 72		
G1 205	1	Diode	BAY 72		
G1 206	1	Diode	BAY 72		
G1 207	1	Diode	BAY 72		
G1 208	1	Z - Diode	ZD 6,2		
G1 209	1	Z - Diode	ZD 6,2		

Y-Ablenkgenerator und Speicherschalter SG-2/BN 429 ②
Y-deflection generator and store switch SG-3/BN 593 ②

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 301	1	Schichtwid.	220 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 302	1	Schichtwid.	39 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 303	1	Schichtwid.	39 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 304	1	Schichtwid.	2,26 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1 [1]
R 305	1	Schichtwid.	330 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 306	1	Schichtwid.	3,01 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 307	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 308	1	Schichtwid.	270 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 309	1	Schichtwid.	1,2 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 310	1	Schichtwid.	1,5 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 311	1	Schichtwid.	3,48 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 312	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 313	1	Schichtwid.	1 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 314	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 315	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 316	1	Schichtwid.	523 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 317	1	Schichtwid.	698 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 318	1	Schichtwid.	12 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 319	1	Schichtwid.	12 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 320	1	Schichtwid.	698 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 321	1	Schichtwid.	523 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 322	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 323	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 324	1	Schichtwid.	24,3 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1 [2]
R 325	1	Schichtwid.	33 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1

Serie -: 1) 12,1 kΩ 2) 24 kΩ

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 326	1	Schichtwid.	12,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 327	1	Schichtwid.	33 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 328	1	Schichtwid.	24,3 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1 [1]
R 329	1	Schichtwid.	12,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 330	1	Schichtwid.	5,6 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 331	1	Schichtwid.	180 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 332	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 333	1	Schichtwid.	3,9 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 334	1	Schichtwid.	100 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 335	1	Schichtwid.	15 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 336	1	Schichtwid.	68 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 337	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 338	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 339	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 340	1	Schichtwid.	15 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 341	1	Schichtwid.	100 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 342	1	Schichtwid.	3,9 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 343	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 344	1	Schichtwid.	180 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 345	1	Schichtwid.	5,6 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 346	1	Schichtwid.	39 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 347	1	Schichtwid.	39 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1

Serie -: 1) 24 kΩ

Y-Linearisierung und Y-Begrenzer SG-2/BN 429 ③
Y-linearizer and Y-limiter SG-3/BN 593 ③

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
P 301	1	Schichtdrehwid.	25 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 302	1	Schichtdrehwid.	25 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 303	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 304	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
C1 301	1	Z - Diode	ZPD 3,9		
C 301	1	Ker. Kond.	27 pF / 2 % / N 150		WN 110 / 2 / 9
C 302	1	Kf - Kond.	10 nF / 20 % / 630 V ~		WN 110 / 3 / 7
C 303	1	Kf - Kond.	10 nF / 20 % / 630 V ~		WN 110 / 3 / 7
C 304	1	Elko	1 µF / 20 % / 35 V ~		WN 110 / 5 / 61
C 305	1	Ker. Kond.	100 pF / 2 % / 63 V / N 750		WN 110 / 2 / 9 1)
C 306	1	Ker. Kond.	100 pF / 2 % / 63 V / N 750		WN 110 / 2 / 9 1)
C 307	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61
C 308	1	Elko	1 µF / 20 % / 35 V ~		WN 110 / 5 / 61
C 309	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61

Serie A...: 1) 1N/EDPU 0,4/Kast 5

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
T 301	1	Transistor	BFY 82		
T 302	1	Transistor	BSX 93		
T 303	1	Transistor	DN 7154		
T 304	1	Transistor	BFX 93		
T 305	1	Transistor	DN 7154		
T 306	1	Transistor	BFX 93		
T 307	1	Transistor	DN 7154		
T 308	1	Transistor	BFX 93		
T 309	1	Transistor	BCY 59 D		
T 310	1	Transistor	2 N 3251		
T 311	1	Transistor	BCY 59 D		
T 312	1	Transistor	BCY 59 D		
T 313	1	Transistor	2 N 3251		
T 314	1	Transistor	BCY 59 D		
T 315	1	Transistor	2 N 3251		
T 316	1	Transistor	2 N 3251		

Y-Linearisierung und Y-Begrenzer SG-2/BN 429 ③
Y-linearizer and Y-limiter SG-3/BN 593

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 401	1	Schichtwid.	1,82 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 402	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 403	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 404	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 405	1	Schichtwid.	9,53 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 406	1	Schichtwid.	8,06 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 407	1	Schichtwid.	8,06 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 408	1	Schichtwid.	9,53 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 409	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 410	1	Schichtwid.	150Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 411	1	Schichtwid.	3,09kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 412	1	Schichtwid.	18 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 413	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 414	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 415	1	Schichtwid.	3,09 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 416	1	Schichtwid.	150 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 417	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 418	1	Schichtwid.	18 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 419	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 420	1	Schichtwid.	22,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 421	1	Schichtwid.	7,15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 422	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 423	1	Schichtwid.	150 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 424	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 425	1	Schichtwid.	1,5 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 426	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 427	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 428	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 429	1	Schichtwid.	560 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 430	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 431	1	Schichtwid.	3,3 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 432	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 433	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 434	1	Schichtwid.	1,5 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 435	1	Schichtwid.	560 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 436	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 437	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 438	1	Schichtwid.	270 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 439	1	Schichtwid.	270 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 440	1	Schichtwid.	27 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 441	1	Schichtwid.	27 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 442	1	Drahtwid.	3,9 Ω / 10 %		SKA - 2 RIG
R 443	1	Drahtwid.	3,9 Ω / 10 %		SKA - 2 RIG
R 444	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 445	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 447	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 448	1	Schichtwid.	562 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 449	1	Drahtwid.	1,5 Ω / 10 %		SKA - 1 RIG
R 450	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 451	1	Schichtwid.	5,6 kΩ / 5 % / Kl. 2 / 0309		
R 452	1	Schichtwid.	150 kΩ / 5 % / Kl. 2 / 0309		
R 453	1	Schichtwid.	5,6 kΩ / 5 % / Kl. 2 / 0309		
R 454	1	Schichtwid.	150 kΩ / 5 % / Kl. 2 / 0309		
P 401	1	Schichtdrehwid.	5 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 402	1	Schichtdrehwid.	5 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 403	1	Schichtdrehwid.	5 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 404	1	Schichtdrehwid.	5 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 405	1	Schichtdrehwid.	25 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 406	1	Schichtdrehwid.	25 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 407	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
C 401	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61
C 402	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61
C 403	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 404	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 405	1	Kf - Kond.	0,33 µF / 20 % / 100 V ~		WN 110 / 3 / 7

X-Linearisierer und X-Endverstärker SG-2/BN 429 ④
X-linearizer and X-final amplifier SG-3/BN 593

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
G1 401	1	Diode	1 N 4448		
G1 402	1	Diode	1 N 4448		
G1 403	1	Diode	1 N 4448		
G1 404	1	Diode	1 N 4448		
G1 405	1	Diode	(1 N 4448)	n. Bv. 429 - 9360	
G1 406	1	Diode	(1 N 4448)	n. Bv. 429 - 9360	
G1 408	1	Diode	(1 N 4448)	n. Bv. 429 - 9360	
G1 409	1	Diode	(1 N 4448)	n. Bv. 429 - 9360	
G1 410	1	Diode	1 N 4448		
G1 411	1	Diode	1 N 4448		
G1 412	1	Z - Diode	ZPD 6,2		
G1 413	1	Diode	1 N 4448		
G1 414	1	Diode	1 N 4448		
G1 415	1	Diode	1 N 4448		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
T 401	1	Transistor	BCY 59 D		
T 402	1	Transistor	2 N 3251		
T 403	1	Transistor	BCY 59 D		
T 404	1	Transistor	BCY 59 D		
T 405	1	Transistor	BCY 59 D		
T 406	1	Transistor	BCY 59 D		
T 407	1	Transistor	2 N 3251		
T 408	1	Transistor	2 N 3251		
T 409	1	Transistor	BCY 59 D		
T 410	1	Transistor	40 392		
T 411	1	Transistor	40 394		
IC 401	1	IC	µA 741 C		WN 141 / 1 / 1

X-Linearisierer und X-Endverstärker SG-2/BN 429
X-linearizer and X-final amplifier SG-3/BN 593 ④

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 501	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 502	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 503	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 504	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 505	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 506	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 507	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 508	1	Schichtwid.	82 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 509	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 510	1	Schichtwid.	3,3 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 511	1	Schichtwid.	220 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 512	1	Schichtwid.	82 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 513	1	Schichtwid.	47 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 514	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 515	1	Schichtwid.	82 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 516	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 517	1	Schichtwid.	3,3 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 518	1	Schichtwid.	220 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 519	1	Schichtwid.	82 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 520	1	Schichtwid.	47 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 521	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 522	1	Schichtwid.	1,8 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 523	1	Schichtwid.	1,8 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 524	1	Schichtwid.	3,92 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 525	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 526	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 527	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 528	1	Schichtwid.	3,92 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 529	1	Schichtwid.	18,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 530	1	Schichtwid.	18,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 531	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 532	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 533	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 534	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 535	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 536	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 537	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 538	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 539	1	Schichtwid.	33 MΩ / 10 % / 0,5 W		LHR 0,5 RIG
R 540	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 541	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 542	1	Schichtwid.	33 MΩ / 10 % / 0,5 W		LHR 0,5 RIG
R 543	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 544	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 545	1	Schichtwid.	33 MΩ / 10 % / 0,5 W		LHR 0,5 RIG
R 546	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 547	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 548	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 549	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 550	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 551	1	Schichtwid.	33 MΩ / 10 % / 0,5 W		LHR 0,5 RIG
R 552	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 553	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 554	1	Schichtwid.	2,2 MΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 555	1	Schichtwid.	1,2 MΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 556	1	Schichtwid.	1,2 MΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 557	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 558	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 559	1	Schichtwid.	220 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 560	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 561	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
C 501	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 502	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 503	1	Ker. Kond.	15 pF / 5 % / P 100		WN 110 / 2 / 3
C 504	1	Ker. Kond.	15 pF / 5 % / P 100		WN 110 / 2 / 3
C 505	1	Ker. Kond.	1 nF / +80 -20 % / R 4000		WN 110 / 2 / 3
C 506	1	Ker. Kond.	1 nF / +80 -20 % / R 4000		WN 110 / 2 / 3
C 507	1	Ker. Kond.	1 nF / +80 -20 % / R 4000		WN 110 / 2 / 3
C 508	1	Ker. Kond.	1 nF / +80 -20 % / R 4000		WN 110 / 2 / 3
C 509	1	Kf - Kond.	33 nF / 20 % / 250 V -		WN 110 / 3 / 7
C 510	1	Kf - Kond.	33 nF / 20 % / 250 V -		WN 110 / 3 / 7
C 511	1	Kf - Kond.	33 nF / 20 % / 250 V -		WN 110 / 3 / 7
C 512	1	Kf - Kond.	0,22 µF / 20 % / 100 V -		WN 110 / 3 / 7
L 501	1	Spule	100 µH		WN 117 / 1 / 2 1)
L 502	1	Spule	100 µH		WN 117 / 1 / 2 1)

Serie A...F: 1) Nr. 1537-76/Delevan

Helltastschaltung SG-2/BN 429
Intensifying circuit SG-3/BN 593 ⑤

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
G1 502	1	Diode	1 N 4448		
G1 503	1	Diode	1 N 4448		
	1	Diode	1 N 4448		
G1 506	1	Diode	1 N 4448		
G1 507	1	Diode	1 N 4448		
G1 508	1	Diode	1 N 4448		
G1 509	1	Diode	1 N 4448		
G1 510	1	Diode	1 N 4448		
G1 512	1	Diode	1 N 4448		
G1 513	1	Diode	1 N 4448		
G1 514	1	Diode	1 N 4448		
G1 515	1	Diode	1 N 4448		
G1 516	1	Diode	1 N 4448		
G1 538	je 1	Diode	1 N 4448		
G1 539	1	Z - Diode	ZPD 2,7		
G1 540	1	Diode	1 N 4448		
G1 541	1	Diode	1 N 4448		
G1 542	1	Diode	1 N 4448		
G1 543	1	Diode	1 N 4448		
G1 544	1	Diode	1 N 4448		

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
T 501	1	Transistor	BSX 93		
T 502	1	Transistor	BCY 59 D		
T 503	1	Transistor	BCY 59 D		
T 504	1	Transistor	BCY 59 D		
T 505	1	Transistor	BCY 59 D		
T 506	1	Transistor	BSX 93		
T 507	1	Transistor	BSX 93		
T 508	1	Transistor	BSX 93		
T 509	1	Transistor	BSX 93		
T 510	1	Transistor	BCY 59 D		
T 511	1	Transistor	BCY 59 D		
T 512	1	Transistor	BCY 59 D		
T 513	1	Transistor	BCY 59 D		
T 514	1	Transistor	BCY 59 D		
T 515	1	Transistor	2 N 2905		
T 516	1	Transistor	2 N 2905		
T 517	1	Transistor	2 N 2905		
T 518	1	Transistor	2 N 2905		
T 519	1	Transistor	BSY 79		
T 520	1	Transistor	BSY 79		
T 521	1	Transistor	BSY 79		
T 522	1	Transistor	2 N 2219		

Helltastschaltung SG-2/BN 429 ⑤
Intensifying circuit SG-3/BN 593

	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 601	1	Schichtwid.	560 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 602	1	Schichtwid.	560 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 603	1	Schichtwid.	1 MΩ / 1 % / Tk 50 / 0411		WN 18 / 4 / 1
R 604	1	Schichtwid.	1,5 MΩ / 1 % / Tk 50 / 0411		WN 18 / 4 / 1
R 605	1	Schichtwid.	825 kΩ / 1 % / Tk 50 / 0411		WN 18 / 4 / 1 1)
R 606	1	Schichtwid.	523 kΩ / 1 % / Tk 50 / 0411		WN 18 / 4 / 1 1)
R 607	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 608	1	Schichtwid.	820 kΩ / 5 % / Kl. 2 / 0414		WN 18 / 3 / 1
R 609	1	Schichtwid.	8,2 MΩ / 5 % / Kl. 2 / 0414		LCA 0414
R 610	1	Schichtwid.	8,2 MΩ / 5 % / Kl. 2 / 0414		LCA 0414
R 611	1	Schichtwid.	1,5 MΩ / 1 % / Tk 50 / 0411		WN 18 / 4 / 1
R 612	1	Schichtwid.	3,3 MΩ / 5 % / Kl. 2 / 0414		WN 18 / 3 / 1
R 613	1	Schichtwid.	2,7 MΩ / 5 % / Kl. 2 / 0414		WN 18 / 3 / 1
R 614	1	Schichtwid.	680 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 615	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 616	1	Schichtwid.	470 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 617	1	Schichtwid.	560 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 618	1	Schichtwid.	220 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 619	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0414		WN 18 / 3 / 1
R 620	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0414		WN 18 / 3 / 1
R 621	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 622	1	Schichtwid.	2,2 MΩ / 5 % / Kl. 2 / 0309		
P 601	1	Schichtdrehwid.	10 MΩ / lin / 0,3 W	Typ 58 Tr Nr. 8309	CRL 2)
P 602	1	Schichtdrehwid.	5 MΩ / lin / 0,3 W		Typ 21 Preh 60 304 000
P 603	1	Schichtdrehwid.	1 MΩ / lin / 0,3 W		3 WN 17 / 2 / 5
C 601	1	Kf - Kond.	22 nF / 20 % / 630 V -		MKT 1822 - 322 / 6 ERO
C 602	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7
C 603	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
C 604	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 605	1	Kf - Kond.	0,22 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 606	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 607	1	Kf - Kond.	33 nF / 20 % / 250 V -		WN 110 / 3 / 7
C 608	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7
C 609	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7
C 610	1	Kf - Kond.	5 nF / +50 -20 % / 6,3 kV -		B 32 237 - B 6502 -S Siemens
C 611	1	Kf - Kond.	5 nF / +50 -20 % / 6,3 kV -		B 32237 - B 6502 - S Siemens
C 612	1	Kf - Kond.	5 nF / +50 -20 % / 6,3 kV -		B 32237 - B 6502 - S Siemens
C 613	1	Kf - Kond.	5 nF / +50 -20 % / 6,3 kV -		B 32237 - B 6502 - S Siemens
C 614	1	Kf - Kond.	0,1 µF / 20 % / 630 V -	MKT - 1822 - 410/6	ERO 4) 3)
C 615	1	Kf - Kond.	0,1 µF / 20 % / 630 V -	MKT - 1822 - 410/6	ERO 4) 3)
C 611	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7
L 601	1	Ablenkeinheit	(AE 67/ 110 Telefunken)	Bv. 429 - 7727	
L 602					
G1 601	1	Diode	BAY 90		
G1 602	1	Diode	1 N 4448		
G1 603	1	Z - Diode	ZPD 24		
G1 604	1	Z - Diode	ZPD 24		
G1 605	1	Diode	1 N 4448		
G1 606	1	Diode	BAY 90		
G1 607	1	Diode	1 N 4448		
G1 608.. G1 611	je 1	Diode	V8 60		
G1 612	1	Diode	1 N 4448		
G1 613	1	Z - Diode	ZPD 24		
T 601	1	Transistor	BSY 79		
T 602	1	Transistor	BSY 79		
Rö 601	*) 1	Rohre	(M 17 - 11 GM)	n. Zchng. 429-0170.20 / 4 m. St.	Telefunken

*) SG-3: Rö 601/M 28-12

Serie B: 1) TK 100 Serie A...C: 2) Nr. 830/Stemag Serie A u. B: 3) 10 nF/20 %/630 V-/WN 110/3/7
Serie : 4) 10 % / MKT-1813-410/6/ERO

Hoch- und Hilfsspannungserzeugung SG-2/BN 429 ⑥
High voltage and auxiliary voltage supply SG-3/BN 593

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 701	1	Schichtwid.	100 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 702	1	Schichtwid.	1 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 703	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 704	1	Schichtwid.	100 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 705	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 706	1	Schichtwid.	1,8 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 707	1	Schichtwid.	1,8 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 708	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 709	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 710	1	Schichtwid.	10 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 711	1	Schichtwid.	10 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 712	1	Schichtwid.	10 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 713	1	Schichtwid.	560 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 714	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 715	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 716	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 717	1	Schichtwid.	1 W / 10 %		SKA - 1 RIG
R 718	1	Schichtwid.	10 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 726	1	Schichtwid.	10,2 kW / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 727	1	Schichtwid.	2,15 kW / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 728	1	Schichtwid.	2,15 kW / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 729	1	Schichtwid.	10,2 kW / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 730	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 731	1	Schichtwid.	4,7 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 732	1	Schichtwid.	220 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 733	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 734	1	Schichtwid.	3,3 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 735	1	Schichtwid.	10 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 736	1	Schichtwid.	3,9 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 737	1	Schichtwid.	12 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 738	1	Schichtwid.	18 kW / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 739	1	Schichtwid.	33 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
R 740	1	Schichtwid.	33 W / 5 % / K1. 2 / 0309		WN 18 / 3 / 1
P 701	1	Drahtdrehwid.	22 W / 4 W / lin		Typ P 4 Achsl=20 mm RIG 1)

Serie A + B: 1) 56 W;

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
C 701	1	Kf - Kond.	0,68 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 702	1	Elko	10 µF / 20 % / 20 V =		WN 110 / 5 / 61
C 703	1	Elko	10 µF / 20 % / 20 V =		WN 110 / 5 / 61
C 704	1	Ker. Kond.	220 pF / 2 % / N 750		WN 110 / 2 /
C 705	1	Kf - Kond.	0,1 µF / 20 % / 100 V =		WN 110 / 3 /
C 706	1	Kf - Kond.	0,1 µF / 20 % / 100 V =		WN 110 / 3 / 7
G1 701	1	Diode	1 N 4448		
G1 702	1	Diode	1 N 4448		
G1 703	1	Diode	1 N 4448		
G1 704	1	Diode	1 N 4448		
G1 710	1	Diode	1 N 4448		
G1 711	1	Diode	1 N 4448		
G1 712	1	Diode	1 N 4448		
G1 713	1	Diode	1 N 4448		
G1 714	1	Z - Diode	ZPD 5,6		
T 701	1	Transistor	BCY 59 D		
T 702	1	Transistor	BCY 72		
T 703	1	Transistor	2 N 2905		
T 704	1	Transistor	BSY 54		
T 705	1	Transistor	2 N 2905		
T 706	1	Transistor	BSY 54		
T 707	1	Transistor	BCY 59 D		
T 708	1	Transistor	BCY 72		
T 710	1	Transistor	BCY 59 D		
SL 701	1	Lampe	6 V / 60 mA		A-506 6 V/60 mA C-7
SL 702	1	Lampe	6 V / 60 mA		A-606 6 V/60 mA C-7
SL 703	1	Lampe	6 V / 60 mA		A-606 6 V/60 mA C-7
SL 704	1	Lampe	6 V / 60 mA		A-606 6 V/60 mA C-7
SL 706	1	Lampe	6,3 V / 0,2 A		610/6,3 V/0,2 A C-7
SL 707	1	Lampe	6,3 V / 0,2 A		610/6,3 V/0,2 A C-7
SL 708	1	Lampe	6,3 V / 0,2 A		610/6,3 V/0,2 A C-7
SL 709	1	Lampe	6,3 V / 0,2 A		610/6,3 V/0,2 A C-7
SL 710	1	Lampe	6 V / 60 mA		WN 114 / 1 / 4
JC 701	1	JC	µA 741 C		WN 141 / 1 / 1
JC 702	1	JC	µA 741 C		WN 141 / 1 / 1
JC 703	1	JC	µA 741 C		WN 141 / 1 / 1

SG-3: P 701; R 717; SL 706...709 entfallen (deleted). C 704/220 pF zusätzlich (in addition).

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 101	1	Schichtwid.	560 W / 5 % / Kl. 2 / 0309		
R 103	1	Schichtwid.	1,2 kW / 5 % / Kl. 2 / 0309		
	1	Schichtwid.	680 kΩ / 5 % / Kl. 2 / 0309		
	1	Schichtwid.	680 kΩ / 5 % / Kl. 2 / 0309		
R 106	1	Schichtwid.	100 W / 5 % / Kl. 2 / 0309		
R 107	1	Schichtwid.	100 W / 5 % / Kl. 2 / 0309		
R 108	1	Schichtwid.	680 Ω / 5 % / Kl. 2 / 0309		
R 109	1	Schichtwid.	680 Ω / 5 % / Kl. 2 / 0309		
R 110	1	Schichtwid.	2,7 kΩ / 5 % / Kl. 2 / 0309		
R 111	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		
R 112	1	Schichtwid.	39 W / 5 % / Kl. 2 / 0309		
R 113	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 115	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 116					
R 117	1	Schichtwid.	470 W / 5 % / Kl. 2 / 0309		
R 118	1	Schichtwid.	2,2 kΩ / 5 % / Kl. 2 / 0309		
R 119	1	Schichtwid.	1 W / 5 % / Kl. 2 / 0309		
R 120	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 121	1	Schichtwid.	680 W / 5 % / Kl. 2 / 0309		
R 122	1	Schichtwid.	56 W / 5 % / Kl. 2 / 0309		
R 123	1	Schichtwid.	180 Ω / 5 % / Kl. 2 / 0309		
R 124	1	Schichtwid.	18 W / 5 % / Kl. 2 / 0309		
R 125	1	Schichtwid.	22 W / 5 % / Kl. 2 / 0309		
R 126	1	Schichtwid.	56 W / 5 % / Kl. 2 / 0309		
R 127	1	Schichtwid.	820 Ω / 5 % / Kl. 2 / 0309		
R 128	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		
R 129	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		
	1	Schichtwid.	390 Ω / 5 % / Kl. 2 / 0309		
R 132	1	Schichtwid.	22 Ω / 5 % / Kl. 2 / 0309		
R 133	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 139	1	Schichtwid.	68 W / 5 % / Kl. 2 / 0309		1)
R 140	1	Schichtwid.	180 Ω / 5 % / Kl. 2 / 0309		
R 141	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R 142	1	Schichtwid.	270 Ω / 5 % / Kl. 2 / 0309		
R 143	1	Schichtwid.	680 Ω / 5 % / Kl. 2 / 0309		
R 144	1	Schichtwid.	2,61 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 145					3)
R 146	1	Schichtwid.	68 Ω / 5 % / Kl 2 / 0309		2) WN 18 / 3 / 1
R 147	1	Schichtwid.	6,65 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 148	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 149	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 150	1	Schichtwid.	150 Ω / 5 % / Kl. 2 / 0309		

Serie A + P: 1) 68,1 W / WN 18 / 4 / 1; 2) entfällt Serie E: 3) 56 Ω / WN 18/3/1;

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 151	1	Schichtwid.	150 Ω / 5 % / Kl. 2 / 0309		
R 152	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 153	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 154	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		
R 155	1	Schichtwid.	82 Ω / 5 % / Kl. 2 / 0309		
R 156	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 157	1	Schichtwid.	3,3 kΩ / 5 % / Kl. 2 / 0309		
R 158	1	Schichtwid.	1 Ω / 5 % / Kl. 2 / 0309		
R 159	1	Schichtwid.	1 Ω / 5 % / Kl. 2 / 0309		
R 160	1	Schichtwid.	10 Ω / 5 % / Kl. 2 / 0309		
R 161	1	Schichtwid.	56,2 W / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 164					4)
R 165	1	Schichtwid.	56 Ω / 5 % / Kl. 2 / 0309		
R 166	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		
R 167	1	Schichtwid.	560 Ω / 5 % / Kl. 2 / 0309		
R 168	1	Schichtwid.	100 W / 5 % / Kl. 2 / 0309		
R 169	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		
R 170	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 171	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 172	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R 173	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R 174	1	Schichtwid.	150 Ω / 5 % / Kl. 2 / 0309		
R 175	1	Schichtwid.	150 Ω / 5 % / Kl. 2 / 0309		
R 176	1	Schichtwid.	330 Ω / 5 % / Kl. 2 / 0309		
R 177	1	Schichtwid.	3,3 kΩ / 5 % / Kl. 2 / 0309		
R 178	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 179	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 180	1	Schichtwid.	1,5 kΩ / 5 % / Kl. 2 / 0309		
R 181	1	Schichtwid.	47 W / 5 % / Kl. 2 / 0309		
R 182	1	Schichtwid.	56 W / 5 % / Kl. 2 / 0309		
R 183	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 184	1	Schichtwid.	680 Ω / 5 % / Kl. 2 / 0309		
R 185	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 186	1	Schichtwid.	18 Ω / 5 % / Kl. 2 / 0309		
R 187	1	Schichtwid.	18 Ω / 5 % / Kl. 2 / 0309		
R 188	1	Schichtwid.	560 Ω / 5 % / Kl. 2 / 0309		
R 191	1	Schichtdrehwid.	1 kΩ / 0,5 W / lin		1 WN 17 / 2 / 8

Serie A + B: 4) 2,2 kΩ;

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
C 107	1	Ker. Kond.	10 nF / -20 +80 % / 50 V ~		Sp 8 U R 10000 RIG 3)
C 103	1	Elko	3,3 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 104	1	Ker. Kond.	10 nF / -20 +80 % / 50 V ~		Sp 8 U R 10000 RIG 3)
C 105	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 106	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61
C 107	1	Ker. Kond.	10 nF / -20 +80 % / 50 V ~		Sp 8 U R 10000 RIG 3)
C 108	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61
C 109	1	Elko	3,3 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 111	1	Elko	4,7 µF / 20 % / 10 V ~		WN 110 / 5 / 61
C 112	1	Elko	33 µF / 20 % / 10 V ~		WN 110 / 5 / 61
C 113	1	Elko	33 µF / 20 % / 10 V ~		WN 110 / 5 / 61
C 114	1	Elko	22 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 115	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 116	1	Elko	[illegible] µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 117	1	Ker. Kond.	3,3 nF ± 0,25 pF / P 100		WN 110 / 2 / 9
C 118	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 119	1	Elko	22 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 120	1	Elko	22 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 121	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 1	1	Ker. Kon	1. nF / -20 +80 % / 50 V ~		Sp 8 U R 10000 RIG 3)
C 126	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 127	1	Elko	10 µF / 20 % / 25 V ~		WN 110 / 5 / 61
C 128	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 129	1	Ker. Kond.	10 nF / -20 +80 % / 50 V ~		Sp 8U R 10000 RIG 1)
C 130	1	Ker. Kond.	10 nF / -20 +80 % / 50 V ~		Sp 8U R 10000 RIG 1)
	1	Elko	3,3 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 132	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 133	1	Elko	1 µF / 20 % / 35 V ~		WN 110 / 5 / 61
C 134	1	Elko	1 µF / 20 % / 35 V ~		WN 110 / 5 / 61
C 135	1	Ker. Kond.	120 pF / 2 % / N 150		WN 110 / 2 / 3
C [illegible]	1	Ker. Kond.	10 nF / -20 +80 % / 50 V ~		Sp 8U R 10000 RIG 1)
C 137	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
C 138	1	Elko	3,3 µF / 20 % / 16 V ~		WN 110 / 5 / 61
C 139	1	Ker. Kond.	39 pF / 2 % / N 150		WN 110 / 2 / 9
C 140	1	Ker. Kond.	2,2 nF / 0 +100 %		00 - 1802,00 / 4
[illegible]	1	Elko	[illegible]		WN 110 / 5 / 61 2)
GI 101	1	Diode	1 N 4448		
GI 102	1	Diode	1 N 4448		
GI 103	1	Z - Diode	ZPD 6,8		
GI 104	1	Z - Diode	ZE 1,5		
GI 105	1	Z - Diode	ZE 1,5		
GI 106	1	Z - Diode	ZPD 6,2		
GI 107	1	Diode	1 N 4448		
GI 108	1	Diode	1 N 4448		
GI 109	1	Diode	1 N 4448		
GI 110	1	Diode	1 N 4448		
GI 111	1	Diode	1 N 4448		
GI 112	1	Diode	1 N 4448		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
GI 113	1	Z - Diode	ZE 1,5		
GI 114	1	Z - Diode	ZE 1,5		
GI 115	1	Diode	1 N 4448		
GI 116	1	Z - Diode	ZPD 2,7		
GI 117	1	Z - Diode	ZPD 4,7		
GI 119	1	Diode	Hp 5082 - 2800		4)
GI 120	1	Diode	Hp 5082 - 2800		4)
GI 121	1	Z - Diode	ZPD 5,6 [illegible] ± 2 % bei Iz = 5,2 mA		
GI 122	1	Z - Diode	ZE 1,5		
GI 123	1	Z - Diode	ZE 1,5		
GI 124	1	Z - Diode	ZPD 6,8		
T 101	1	Transistor	BF 245 A		
T 102	1	Transistor	BSX 93		
T 103	1	Transistor	BFX 48		
T 104	1	Transistor	BSX 93		
T 105	1	Transistor	2 N 918		
T 106	1	Transistor	BFX 48		
T 107	1	Transistor	BFX 48		
T 109	1	Transistor	BSX 93		
T 110	1	Transistor	BSX 93		
T 111	1	Transistor	BFX 48		
T 112	1	Transistor	BSX 93		
T 113	1	Transistor	BSX 93		
T 114	1	Transistor	BSX 93		
T 115	1	Transistor	BFX 48		
T 116	1	Transistor	BFX 48		
T 120	1	Transistor	BSX 93		
T 121	1	Transistor	BSX 93		
T 122	1	Transistor	2 N 4261		
T 123	1	Transistor	BFY 90		
T 124	1	Transistor	BSX 93		
T 125	1	Transistor	2 N 3251		
T 126	1	Transistor	2 N 3251		
T 127	1	Transistor	2 N 3251		
T 128	1	Transistor	BSX 93		
T 129	1	Transistor	BSX 93		
JC 101	1	JC	SN 7490 N S 1		
JC 102	1	JC	SN 7400 N		

Serie R: 1) +100 -20 %/40 V K 10000/EDPU 0,6 Serie A u. -: 2) entfällt. Serie R: 3) +100 -20 %/40 V K 10000/EDPU 0,6

Serie A + B: 4) entfällt;

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 201	1	Schichtwid.	200 kW / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 203	1	Schichtwid.	4,7 Ω / 5 % / Kl. 2 / 0309		
[illegible]	1	Schichtwid.	140 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
[illegible]	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 206	1	Schichtwid.	56 kΩ / 5 % / Kl. 2 / 0309		
R 207	1	Schichtwid.	560 kΩ , 5 % / Kl. 2 / 0389		
R 208	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 209	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 210	1	Schichtwid.	150 Ω / 5 % / Kl. 2 / 0309		
R 211	1	Schichtwid.	1,8 kW / 5 % / Kl. 2 / 0309		
R 212	1	Schichtwid.	220 Ω / 5 % / Kl. 2 / 0309		
R 213	1	Schichtwid.	220 Ω / 5 % / Kl. 2 / 0309		
R 214	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 215	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 216	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 217	1	Schichtwid.	220 Ω / 5 % / Kl. 2 / 0309		
R 218	1	Schichtwid.	220 Ω / 5 % / Kl. 2 / 0309		
R 219	1	Schichtwid.	8,2 kΩ / 5 % / Kl. 2 / 0309		
R 220	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		
R 221	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 222	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 223	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 224	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 226	1	Schichtwid.	1,3 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 227	1	Schichtwid.	3,9 kΩ / 5 % / Kl. 2 / 0309		
R 228	1	Schichtwid.	7,32 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 229	1	Schichtwid.	7,87 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
[illegible]	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
[illegible]	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 232	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		
R 233	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 234	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 235	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 236	1	Schichtwid.	2,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 237	1	Schichtwid.	1,18 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 238	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 239	1	Schichtwid.	3,83 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 240	1	Schichtwid.	1,62 kW / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 241	1	Schichtwid.	1 kW / 5 % / Kl. 2 / 0309		
R 242	1	Schichtwid.	51,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 250	1	Schichtwid.	1,3 kΩ / 0,5% / Tk 50 / 0207		WN 18 / 4 / 1

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 251	1	Schichtwid.	18,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 252	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 253	1	Schichtwid.	649 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 254	1	Schichtwid.	10,5 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 255	1	Schichtwid.	10,5 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 256	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 207		WN 18 / 4 / 1
R 257	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 270	1	Schichtwid.	698 Ω / 0,5% / Tk 50 / 0207		WN 18 / 4 / 1
R 271	1	Schichtwid.	590 Ω / 0,5% / Tk 50 / 0207		WN 18 / 4 / 1 2)
R 272	1	Schichtwid.	1,8 kΩ / 0,5% / Tk 50 / 0207		WN 18 / 4 / 1
R 273	1	Schichtwid.	8,76 kΩ / 0,5% / Tk 50 / 0207		WN 18 / 4 / 1
R 274	1	Schichtwid.	16,2 kΩ / 0,5% / Tk 50 / 0207		WN 18 / 4 / 1 3)
R 275	1	Schichtwid.	52,3 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1 1)
R 277	1	Schichtwid.	698 Ω / 1 % / Tk 50 / 0209		WN 18 / 4 / 1
R 278	1	Schichtwid.	7,77 kΩ 0,5% / Tk 50 / 0207		WN 18 / 4 / 1
R 279	1	Schichtwid.	7,77 kΩ / 0,5% Tk 50 / 0207		WN 18 / 4 / 1
R 280	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 281	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
P 201	1	Schichtdrehwid.	2,5 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 202	1	Schichtdrehwid.	25 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 203	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8

Serie A + B: 1) 44,2 kΩ; Serie B: 2) TK 25 3) 16,0 kΩ/0,25 %

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
C 201	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 202	1	Kf - Kond.	0,22 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 203	1	Ker. Kond.	1 nF / -20 +80 % / R 4000		WN 110 / 2 / 3
C 204	1	Elko	4,7 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 205	1	Elko	4,7 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 206	1	Elko	10 µF / 20 % / 25 V -		WN 110 / 5 / 61
C 207	1	Elko	10 µF / 20 % / 25 V -		WN 110 / 5 / 61
C 208	1	Elko	6,8 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 209	1	Ker. Kond.	68 pF / 2 % / N 150		WN 110 / 2 / 9
C 211	1	Ker. Kond.	100 pF / 2 % / N 150		WN 110 / 2 / 9
C 212	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 213	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 214	1	Ker. Kond.	1 nF / -20 +80 % / R 4000		WN 110 / 2 / 3
C 215	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 216	1	Kf - Kond.	2,2 nF / 2 % / 160 V -		WN 110 / 3 / 1
C 217	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 221	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 222	1	Elko	3,3 µF / 10 % / 16 V -		ETR 3,3/16 ERO
C 223	1	Kf - Kond.	0,22 µF / 10 % / 100 V -		MKT 1822-422/0
C 224	1	Kf - Kond.	0,15 µF / 10 % / 100 V -		MKT 1822-415/0
C 225	1	Kf - Kond.	22 nF / 10 % / 400 V -		MKT 1822-322/4
C 226	1	Kf - Kond.	0,33 µF / 10 % / 100 V -		MKT 1822 - 433 / 0
C 227	1	Kf - Kond.	0,1 µF / 10 % / 100 V -		MKT 1822 - 410 / 0
C 235	1	Kf - Kond.	0,1 µF / 10 % / 100 V -		MKT 1822 - 410 / 0
C 236	1	Kf - Kond.	10 nF / 10 % / 630 V -		MKT 1822 - 310 / 6
C 237	1	Kf - Kond.	6,8 nF / 10 % / 400 V -		WN 110 / 3 / 2
C 238	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 239	1	Kf - Kond.	10 nF / 10 % / 630 V -		MKT 1822 - 310 / 6
C 240	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 241	1	Kf - Kond.	3,3 nF / 10 % / 400 V -		KT 1800 - 233 / 4

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
G1 201	1	Diode	1 N 4448		
G1 202	1	Diode	1 N 4448		
G1 203	1	Diode	1 N 4448		
G1 204	1	Diode	1 N 4448		
G1 205	1	Z - Diode	ZPD 5,1 rt		WN 140 / 3 /
G1 206	1	Diode	1 N 4448		
G1 207	1	Diode	1 N 4448		
G1 208	1	Diode	1 N 4448		
G1 209	1	Diode	1 N 4448		
T 201	1	Transistor	BCY 59 D		
T 202	1	Transistor	BCY 78 D		
T 203	1	Transistor	BCY 59 D		
T 204	1	Transistor	BCY 59 D		
T 205	1	Transistor	BCY 59 D		
T 206	1	Transistor	BCY 78 D		
T 207	1	Transistor	BCY 78 D		
T 208	1	Transistor	BCY 59 D		
T 209	1	Transistor	BCY 78 D		
JC 201	1	JC	µA 739 C		U 6 A 7739 393
JC 203	1	JC	µA 741 C		WN 141 / 1 / 1
JC 204	1	JC	µA 741 C		WN 141 / 1 / 1
JC 205	1	JC	µA 741 C		WN 141 / 1 /
JC 207	1	JC	µA 741 C		WN 141 / 1 / 1
JC 208	1	JC	µA 741 C		WN 141 / 1 / 1
JC 209	1	JC	µA 741 C		WN 141 / 1 / 1
S 201	1	Schalter		Bv, 454 - 8002	
Bu 201	1	Buchse	Uni 9 A		WN 119 / 9 / 4
St 201	1	Stecker			B WN 119 / 8 / 3

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung -	Hersteller, Anmerkgn
R 301	1	Schichtwid.	27 Ω / 5 % / Kl. 2 / 0309		
R 302	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 303	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
[illegible]	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
[illegible]	1	Schichtwid.	2,2 kΩ / 5 % / Kl. 2 / 0309		
R 306	1	Schichtwid.	3,83 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 307	1	Schichtwid.	10,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 308	1	Schichtwid.	5,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 309	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 310	1	Schichtwid.	4,99 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 311	1	Schichtwid.	20 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 312	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 313	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 314	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 315	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 316	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 317	1	Schichtwid.	2,2 kΩ / 5 % / Kl. 2 / 0309		
R 318	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 319	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 326	1	Schichtwid.	681 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 327	1	Schichtwid.	39,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 328	1	Schichtwid.	120 kΩ / 5 % / Kl. 2 / 0309		
R 329	1	Schichtwid.	22 Ω / 5 % / Kl. 2 / 0309		
[illegible]	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		
R 332	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R 333	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R 334	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 335	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		
R 336	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 337	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 338	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		
R 339	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 340	1	Schichtwid.	562 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 341	1	Schichtwid.	470 kΩ / 5 % / Kl. 2 / 0309		
R 342	1	Schichtwid.	8,25 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 343	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 344	1	Schichtwid.	33 kΩ / 5 % / Kl. 2 / 0309		
R 345	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 346	1	Schichtwid.	8,25 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 347	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 348	1	Schichtwid.	680 Ω / 5 % / Kl. 2 / 0309		
R 349	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung -	Hersteller, Anmerkgn
R 351	1	Schichtwid.	6,19 kΩ /1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 352	1	Schichtwid.	220 kΩ / 5 % / Kl. 2 / 0309		
R 353	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		
R 356	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 357	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 358	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 359	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
[illegible]	1	Schichtwid.	470 kΩ / 5 % / Kl. 2 / 0309		
R 361	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 362	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 363	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 364	1	Schichtwid.	18 kΩ / 5 % / Kl. 2 / 0309		
R 365	1	Schichtwid.	120 kΩ / 5 % / Kl. 2 / 0309		
R 366	1	Schichtwid.	120 kΩ / 5 % / Kl. 2 / 0309		
R 367	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 368	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 369	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 370	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 371	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 372	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		
R 373	1	Schichtwid.	4,99 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 374	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 375	1	Schichtwid.	8,2 kΩ / 5 % / Kl. 2 / 0309		
P 302	1	Schichtdrehwid.	2 x 10 kΩ / 10 % / lin		Prehstat 24 Tandem Nr. 65 120 - 000 Achse: 32, Buchse: 8
P 303	1	Schichtdrehwid.	10 kΩ / lin / 3 W	Typ 8400, Vitroa, 28,6 x 22,2 Buchse=3/8-32 NEF,Achs >=6,4 mm,Achse=20	
P 304	1	Schichtdrehwid.	500 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
C 301	1	Kf - Kond.	10 µF / 20 % / 25 V =		B 32110-D 3106 - M Siemens
C 302	1	Elko	68 µF / 20 % / 16 V		WN 110 / 5 / 61
C 303	1	Elko	68 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 304	1	Kf - Kond.	68 nF / 20 % / 100 V =		WN 110 / 3 / 7
C 305	1	Kf - Kond.	22 nF / 20 % / 400 V =		WN 110 / 3 / 7
C 311	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 313	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 314	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 315	1	Elko	3,3 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 316	1	Kf - Kond.	0,1 µF / 20 % / 100 V =		WN 110 / 3 / 7

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
G1 301	1	Diode	FD 300		
G1 302	1	Diode	FD 300		
G1 303	1	Diode	1 N 4448		
G1 304	1	Diode	1 N 4448		
G1 305	1	Z - Diode	ZPD 6,2 U_Z =6,1 V ± 2 % bei I_Z = 5 mA		
G1 310	1	Z - Diode	ZPD 6,2		
G1 311	1	Z - Diode	ZPD 6,2		
G1 312	1	Diode	1 N 4448		
G1 313	1	Diode	1 N 4448		
G1 314	1	Diode	1 N 4448		
G1 315	1	Diode	1 N 4448		
G1 316	1	Diode	1 N 4448		
G1 317	1	Diode	1 N 4448		
T 301	1	Transistor	BCY 59 D		
T 302	1	Transistor	BCY 59 D		
T 303	1	Transistor	BCY 78 D		
T 304	1	Transistor	BCY 59 D		
T 305	1	Transistor	BCY 59 D		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller Anmerkgn
T 310	1	Transistor	BCY 78 D		
T 311	1	Transistor	BCY 59 D		
T 312	1	Transistor	BCY 59 D		
T 313	1	Transistor	BCY 59 D		
T 314	1	Transistor	BCY 59 D		
T 315	1	Transistor	BCY 78 D		
JC 301	1	JC	µA 741 C		WN 141 / 1 / 1
JC 303	1	JC	µA 741 C		WN 141 / 1 / 1
JC 304	1	JC	µA 741 C		WN 141 / 1 / 1
JC 305	1	JC	LM 311 H		
S 301	1	Schalter	Kont.MS 70x6um hartverg. 2u Hp.Sonderqualität		Typ KMF EBE
S 302	1	Schalter	Kont.MS 70x6um hartverg. 2u Hp.Sonderqualität		Typ KMF EBE

Dunkeltastschaltung und X-Verstärker SGD-21 ③
Blanking circuit and X-amplifier BN 454

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 1	1	Schichtwid.	49,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 2	1	Schichtwid.	49,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 3	1	Schichtwid.	49,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 4	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 5	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 7	1	Schichtwid.	10 kΩ / 0,25 % / Tk 50 / 0207		WN 18 / 4 / 1
R 8	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 9	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 10	1	Schichtwid.	10 kΩ / 0,25 % / Tk 50 / 0207		WN 18 / 4 / 1
R 11	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 12	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 13	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 14	1	Schichtwid.	887 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 15	1	Schichtwid.	48,7 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 17	1	Schichtwid.	120 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 18	1	Schichtwid.	22 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 19	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 20	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 21	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 22	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 23	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 24	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 25	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 26	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 27	1	Schichtwid.	8,25 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 28	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 29	1	Schichtwid.	475 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 30	1	Schichtwid.	33 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 31	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 32	1	Schichtwid.	8,25 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 33	1	Schichtwid.	470 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 34	1	Schichtwid.	220 kΩ / 5 % / Kl. 2 / 0309		
R 35	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		
R 36	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 37	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 38	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 39	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 40	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 41	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 42	1	Schichtwid.	909 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 43	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 44	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 45	1	Schichtwid.	6,19 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 46	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 47	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 48	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 49	1	Schichtwid.	120 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1
R 50	1	Schichtwid.	120 kΩ / 5 % / Kl. 2 / 0309		WN 18 / 3 / 1

X-Verstärker SGH-21
X-amplifier BN 581

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 51	1	Schichtwid.	4,7 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 52	1	Schichtwid.	6,8 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 53	1	Schichtwid.	68 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R [illegible]	1	Schichtwid.	100 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R [illegible]	1	Schichtwid.	12 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 56	1	Schichtwid.	4,99 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 57	1	Schichtwid.	10 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 58	1	Schichtwid.	8,2 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 59	1	Schichtwid.	470 Ω / 5 % / KT. 2 / 0309		WN 18 / 3 / 1
R 60	1	Schichtwid.	6,8 kΩ / 5 % / KT. 2 / 0309		WN 18 / 3 / 1 1)
P 1	1	Schichtdrehwid.	100 Ω / lin / 0,5 W		2 WN 17 / 2 / 8
P 2	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8
P 3	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8
P 5	1	Schichtdrehwid.	2 x 10 kΩ / ± 10 % / lin		Preostat 24 Achsl.=32,Buchsl=8mm Nr. 65 120 - 000
P 6	1	Schichtdrehwid.	10 kΩ / lin / 0,3 W		Typ 550 Nr.6000 CRL Achsl=16mm,Buchsl=8mm
P 7	1	Schichtdrehwid.	500 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8
C 2	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 3	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
[illegible]	1	Kf - Kond.	0,22 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 7	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 8	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 9	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 11	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 12	1	Elko	3,3 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 13	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
IC 1	1	IC	µA 741 C		WN 141 / 1 / 1
IC 2	1	IC	µA 741 C		WN 141 / 1 / 1
IC 3	1	IC	LM 311 N		
IC 4	1	IC	µA 741 C		WN 141 / 1 / 1
IC 5	1	IC	µA 741 C		WN 141 / 1 / 1

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
G1 1	1	Diode	1 N 4448		
G1 2	1	Diode	1 N 4448		
G1 5	1	Z - Diode	ZPD 6,2		
G1 6	1	Diode	1 N 4448		
G1 7	1	Z - Diode	ZPD 6,2		
G1 8	1	Diode	1 N 4448		
G1 9	1	Diode	1 N 4448		
G1 10	1	Diode	1 N 4448		
G1 11	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
T 1	1	Transistor	BCY 78 D		
T 2	1	Transistor	BCY 59 D		
T 3	1	Transistor	BCY 59 D		
T 4	1	Transistor	BCY 59 D		
T 5	1	Transistor	BCY 59 D		
T 6	1	Transistor	BCY 78 D		
Bu 1	1	Buchse	3 polig		WN 119 / 1 / 5
S 1	1	Schalter	2 u Kont.MS 70x6u hartverg. Hp.Sonderqualität		Typ KMF Fa.EBE
S 2	1	Schalter	2 u Kont.MS 70x6u hartverg. Hp.Sonderqualität		Typ KMF Fa.EBE

Serie A...C: 1) 6,8 kΩ

X-Verstärker SGH-21
X-amplifier BN 581

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 12	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 13	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 15	1	Schichtwid.	887 Ω / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 16	1	Schichtwid.	48,7 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 17	1	Schichtwid.	120 kΩ / 5 % / K1. 2 / 0309		
R 18	1	Schichtwid.	22 Ω / 5 % / K1. 2 / 0309		
R 19	1	Schichtwid.	1,2 kΩ / 5 % / K1. 2 / 0309		
R 20	1	Schichtwid.	1,2 kΩ / 5 % / K1. 2 / 0309		
R 21	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 22	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 23	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 24	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 25	1	Schichtwid.	27 kΩ / 5 % / K1. 2 / 0309		
R 26	1	Schichtwid.	27 kΩ / 5 % / K1. 2 / 0309		
R 27	1	Schichtwid.	8,25 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 28	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 29	1	Schichtwid.	475 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 30	1	Schichtwid.	33 kΩ / 5 % / K1. 2 / 0309		
R 31	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 32	1	Schichtwid.	8,25 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 33	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 34	1	Schichtwid.	220 kΩ / 5 % / K1. 2 / 0309		
R 35	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 36	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		
R 37	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 38	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		
R 39	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 40	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 41	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 42	1	Schichtwid.	909 Ω / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 43	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		
R 44	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 45	1	Schichtwid.	1,19 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 46	1	Schichtwid.	27 kΩ / 5 % / K1. 2 / 0309		
R 47	1	Schichtwid.	27 kΩ / 5 % / K1. 2 / 0309		
R 48	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 49	1	Schichtwid.	120 kΩ / 5 % / K1. 2 / 0309		
R 50	1	Schichtwid.	120 kΩ / 5 % / K1. 2 / 0309		
R 51	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 52	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 53	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 54	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		
R 55	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 56	1	Schichtwid.	4,99 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 57	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 58	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		
R 59	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 60	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 101	1	Schichtwid.	1,8 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 102	1	Schichtwid.	898 kΩ / 0,25 % / Tk 50 / 0411		WW 18 / 4 / 1
R 103	1	Schichtwid.	100 kΩ / 0,1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 105	1	Schichtwid.	1,8 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 106	1	Schichtwid.	898 kΩ / 0,25 % / Tk 50 / 0411		WW 18 / 4 / 1
R 107	1	Schichtwid.	100 kΩ / 0,1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 109	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 110	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 111	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 112	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 113	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 114	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 115	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 116	1	Schichtwid.	390 Ω / 5 % / K1. 2 / 0309		
R 117	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 118	1	Schichtwid.	5,23 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 119	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 120	1	Schichtwid.	5,23 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 121	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 122	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 123	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 124	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 125	1	Schichtwid.	10 kΩ / 0,25 % / Tk 50 / 0207		WW 18 / 4 / 1
R 126	1	Schichtwid.	20 kΩ / 0,25 % / Tk 50/0207		WW 18 / 4 / 1
R 127	1	Schichtwid.	20 kΩ / 0,25 % / Tk 50/0207		WW 18 / 4 / 1
R 128	1	Schichtwid.	44,8 kΩ / 0,25 % / Tk 50/0207		WW 18 / 4 / 1
R 129	1	Schichtwid.	4,99 kΩ / 0,5 % / Tk 50 /0207		WW 18 / 4 / 1
R 130	1	Schichtwid.	44,8 kΩ / 0,25 % / Tk 50/0207		WW 18 / 4 / 1
R 131	1	Schichtwid.	4,99 kΩ / 0,5 % / Tk 50 /0207		WW 18 / 4 / 1
R 132	1	Schichtwid.	49,9 kΩ / 0,5 % / Tk 50 /0207		WW 18 / 4 / 1
R 133	1	Schichtwid.	48,7 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 134	1	Schichtwid.	47 Ω / 5 % / K1. 2 / 0309		
R 135	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 136	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
P 1	1	Schichtdrehwid.	250 Ω / lin / 0,5 W		2 WW 17 / 2 / 8
P 2	1	Schichtdrehwid.	2,5 kΩ / lin / 0,5 W		2 WW 17 / 2 / 8
P 5	1	Schichtdrehwid.	2 x 10 kΩ / ± 10 % / lin		Präzistat 24, Nr. 65-120-000 Achse1=32mm, Buchse1=8mm
P 6	1	Schichtdrehwid.	10 kΩ / lin / 0,3 W		Typ 550 Nr. 5000 CRL Achse1=16mm, Buchse1=8mm
P 7	1	Schichtdrehwid.	500 kΩ / lin / 0,5 W		2 WW 17 / 2 / 8
C 6	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WW 110 / 3 / 7
C 7	1	Elko	22 µF / 20 % / 16 V =		WW 110 / 5 / 61
C 8	1	Elko	22 µF / 20 % / 16 V =		WW 110 / 5 / 61
C 9	1	Elko	22 µF / 20 % / 16 V =		WW 110 / 5 / 61
C 11	1	Kf - Kond.	0,1 µF / 20 % / 100 V =		WW 110 / 3 / 7
C 12	1	Elko	3,3 µF / 20 % / 16 V =		WW 110 / 5 / 61
C 13	1	Elko	22 µF / 20 % / 16 V =		WW 110 / 5 / 61

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
C 40	1	Ker. Kond.	4,7 pF / ± 0,5 pF / NPO		WN 110 / 2 / 9
C 41	1	Ker. Kond.	27 pF / 2 % / NPO		WN 110 / 2 / 9
	1	Ker. Kond.	4,7 pF / ± 0,5pF / NPO		WN 110 / 2 / 9
C 44	1	Trimmer	10 / 40 pF / N 750		10 S - Trike 20 Stettner & Co
C 47	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 48	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 49	1	Ker. Kond.	47 pF / 2 % / N 150		WN 110 / 2 / 9
C 50	1	Ker. Kond.	47 pF / 2 % / N 150		WN 110 / 2 / 9
C 51	1	Ker. Kond.	22 pF / 2 % / N 150		WN 110 / 2 / 9
C 52	1	Ker. Kond.	22 pF / 2 % / N 150		WN 110 / 2 / 9
C 53	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 54	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
G1 5	1	Z - Diode	ZPD 6,2		
G1 6	1	Diode	1 N 4448		
G1 7	1	Z - Diode	ZPD 6,2		
G1 8	1	Diode	1 N 4448		
G1 9	1	Diode	1 N 4448		
G1 10	1	Diode	1 N 4448		
G1 11	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
G1 21	1	Diode	FD 300		
G1 22	1	Diode	FD 300		
G1 23	1	Diode	FD 300		
G1 24	1	Diode	FD 300		
G1 25	1	Z - Diode	ZPD 2,7		
G1 26	1	Diode	1 N 4448		
G1 27	1	Diode	1 N 4448		
T 1	1	Transistor	BCY 78 D		
T 2	1	Transistor	BCY 59 D		
T 3	1	Transistor	BCY 59 D		
T 4	1	Transistor	BCY 59 D		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
T 5	1	Transistor	BCY 59 D		
T 6	1	Transistor	BCY 78 D		
T 26	1	Transistor	2 N 5519		
T 27	1	Transistor	BCY 59 D		
T 28	1	Transistor	BCY 59 D		
T 29	1	Transistor	2 N 5519		
IC 3	1	IC	LM 311 H		
IC 4	1	IC	µA 741 C		WN 141 / 1 / 1
IC 5	1	IC	µA 741 C		WN 141 / 1 / 1
IC 7	1	IC	µA 741 C		WN 141 / 1 / 1
IC 8	1	IC	µA 741 C		WN 141 / 1 / 1
IC 9	1	IC	µA 741 C		WN 141 / 1 / 1
S 1	1	Schalter		Br. 646 - 8001	
S 2	1	Schalter			4 WN 13 / 5 / 2
S 3	1	Schalter	2 u Kont.MS 7046 hartverg. Hp.Sonderqualität		Typ KMF Fa. EBE
Bu 1	1	Buchse	3 polig		WN 119 / 1 / 5

X-Verstärker SGH-22
X-amplifier BN 647

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 1	1	Schichtwid.	33,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 2	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		
R 3	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		
R 4	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		
R 5	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 6	1	Schichtwid.	18,2 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 7	1	Schichtwid.	9,76 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 8	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 9	1	Schichtwid.	1,91 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 10	1	Schichtwid.	9,76 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 11	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 12	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 13	1	Schichtwid.	820 Ω / 5 % / Kl. 2 / 0309		–
R 14	1	Schichtwid.	1,8 kΩ / 5 % / Kl. 2 / 0309		
R 15	1	Schichtwid.	1,8 kΩ / 5 % / Kl. 2 / 0309		
R 16	1	Schichtwid.	1,8 kΩ / 5 % / Kl. 2 / 0309		
R 17	1	Schichtwid.	1,8 kΩ / 5 % / Kl. 2 / 0309		
R 20	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 21	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 22	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 23	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 24	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R 25	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 26	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 27	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 28	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 29	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 30	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 31	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 32	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 33	1	Schichtwid.	180 Ω / 5 % / Kl. 2 / 0309		
R 34	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 35	1	Schichtwid.	180 Ω / 5 % / Kl. 2 / 0309		
R 36	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 37	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 38	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 39	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		
R 40	1	Schichtwid.	12 kΩ / 5 % / Kl. 2 / 0309		
R 41	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 42	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 43	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 44	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 45	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 46	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 47	1	Schichtwid.	680 kΩ / 5 % / Kl. 2 / 0309		
R 48	1	Schichtwid.	680 kΩ / 5 % / Kl. 2 / 0309		
R 49	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 50	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 51	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 61	1	Schichtwid.	1,5 kΩ / 5 % / Kl. 2 / 0309		
R 62	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 63	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 64	1	Schichtwid.	1,5 kΩ / 5 % / Kl. 2 / 0309		
R 65	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 67	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 68	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 69	1	Schichtwid.	18 kΩ / 5 % / Kl. 2 / 0309		
R 70	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 71	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 72	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 73	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 74	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 75	1	Schichtwid.	3,9 kΩ / 5 % / Kl. 2 / 0309		
R 76	1	Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R 77	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 78	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 79	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 80	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 81	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 82	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 83	1	Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R 84	1	Schichtwid.	33 kΩ / 5 % / Kl. 2 / 0309		
R 85	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		
R 86	1	Schichtwid.	27 kΩ / 5 % / Kl. 2 / 0309		
R 87	1	Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R 88	1	Schichtwid.	470 kΩ / 5 % / Kl. 2 / 0309		
R 89	1	Schichtwid.	3,9 kΩ / 5 % / Kl. 2 / 0309		
R 90	1	Schichtwid.	100 Ω / 5 % / Kl. 2 / 0309		
R 91	1	Schichtwid.	3,9 kΩ / 5 % / Kl. 2 / 0309		
R 92	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		
R 93	1	Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R 94	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		
R 95	1	Schichtwid.	3,9 kΩ / 5 % / Kl. 2 / 0309		
R 96	1	Schichtwid.	150 kΩ / 5 % / Kl. 2 / 0309		
R 97	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 98	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		
R 99	1	Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R 100	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 101	1	Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R 102	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 103	1	Schichtwid.	2,2 kΩ / 5 % / Kl. 2 / 0309		
R 104	1	Schichtwid.	120 Ω / 5 % / Kl. 2 / 0309		
R 105	1	Schichtwid.	39 kΩ / 5 % / Kl. 2 / 0309		
R 106	1	Schichtwid.	82 kΩ / 5 % / Kl. 2 / 0309		
R 107	1	Schichtwid.	220 kΩ / 5 % / Kl. 2 / 0309		
R 108	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 109	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 110	1	Schichtwid.	680 kΩ / 5 % / Kl. 2 / 0309		
R 111	1	Schichtwid.	5,6 kΩ / 5 % / Kl. 2 / 0309		
R 112	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0309		
R 113	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 114	1	Schichtwid.	8,2 kΩ / 5 % / Kl. 2 / 0309		
P 1	1	Drahtdrehwid.	5 kΩ / lin / 3 W	Typ R400, Vitrohm, 28,5 x 22,7 Buchse=3/8-32 NEF,Achs ø=6,4 mm,Schlitz=4 mm	
P 2	1	Drahtdrehwid.	5 kΩ / lin / 3 W	Typ R400, Vitrohm, 28,5 x 22,7 Buchse=3/8-32 NEF,Achs ø=6,4 mm,Schlitz=4 mm	
P 3	1	Schichtdrehwid.	1 MΩ / lin / 0,15 W	Nr. 41504 - Knopffarbe: grau	

Frequenzmarken SGM-21
Frequency markers BN 582

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
C 1	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 2	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 3	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 4	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 5	1	Kf - Kond.	0,33 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 6	1	Kf - Kond.	0,33 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 7	1	Kf - Kond.	0,33 µF / 20 % / 100 V -		WN 110 / 3 / 7
C 8	1	Ker. Kond.	1 nF / 10 % / 63 V -		WN 110 / 2 / 10
C 10	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 11	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 12	1	Kf - Kond.	0,1 µF / 20 % / 100 V -		WN 110 / 3 / 7
G1 1	1	Diode	1 N 4448		
G1 2	1	Diode	1 N 4448		
G1 3	1	Z - Diode	ZPD 5,1 rt		WN 140 / 3 / 2
G1 4	1	Z - Diode	ZPD 6,2		
G1 5	1	Diode	1 N 4448		
G1 6	1	Diode	1 N 4448		
G1 7	1	Diode	1 N 4448		
G1 8	1	Diode	1 N 4448		
G1 9	1	Diode	1 N 4448		
G1 11	1	Z - Diode	ZPD 6,2		
G1 12	1	Diode	1 N 4448		
G1 13	1	Diode	1 N 4448		
G1 14	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
G1 16	1	Diode	1 N 4448		
G1 17	1	Diode	1 N 4448		
G1 18	1	Z - Diode	ZPD 6,2		
G1 19	1	Diode	1 N 4448		
G1 20	1	Diode	1 N 4448		
G1 21	1	Diode	1 N 4448		
G1 22	1	Diode	1 N 4448		
G1 23	1	Diode	1 N 4448		
G1 24	1	Diode	1 N 4448		
G1 25	1	Diode	1 N 4448		
G1 26	1	Diode	1 N 4448		
G1 27	1	Diode	1 N 4448		
G1 28	1	Diode	1 N 4448		
G1 29	1	Diode	1 N 4448	ausgesucht nach Bv. 582 - 9360	
G1 30	1	Diode	1 N 4448		
G1 31	1	Diode	1 N 4448		
G1 32	1	Diode	1 N 4448	ausgesucht nach Bv. 582 - 9360	
G1 33	1	Diode	1 N 4448		
G1 34	1	Diode	1 N 4448		
G1 35	1	Diode	1 N 4448		
G1 36	1	Diode	1 N 4448		
G1 37	1	Diode	1 N 4448		
G1 38	1	Diode	hp 5082 - 2800		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
G1 40	1	Diode	1 N 4448		
G1 41	1	Diode	1 N 4448		
G1 42	1	Diode	1 N 4448		
G1 43	1	Diode			
T 1	1	Transistor	BFY 81		
T 3	1	Transistor	BCY 59 D		
T 4	1	Transistor	BCY 78 D		
T 5	1	Transistor	BCY 59 D		
T 6	1	Transistor	BCY 59 D		
T 7	1	Transistor	BCY 59 D		
T 8	1	Transistor	BCY 78 D		
T 9	1	Transistor	BFY 81		
T 11	1	Transistor	BCY 59 D		
T 12	1	Transistor	BCY 78 D		
T 13	1	Transistor	BCY 59 D		
T 14	1	Transistor	BCY 59 D		
T 15	1	Transistor	BCY 59 D		
T 16	1	Transistor	BCY 78 D		
T 20	1	Transistor	BCY 59 D		
T 21	1	Transistor	BCY 59 D		
T 22	1	Transistor	BCY 59 D		
T 23	1	Transistor	BCY 78 D		
T 24	1	Transistor	BSX 93		
T 25	1	Transistor	BCY 78 D		
T 26	1	Transistor	BCY 59 D		
T 27	1	Transistor	BCY 78 D		
T 28	1	Transistor	BCY 78 D		
T 29	1	Transistor	BCY 59 D		
T 30	1	Transistor	BCY 59 D		
T 31	1	Transistor	BCY 59 D		
T 32	1	Transistor	BCY 78 D		
T 33	1	Transistor	BCY 59 D		
T 34	1	Transistor	BCY 59 D		
T 35	1	Transistor	BCY 78 D		
IC 1	1	IC	µA 741 C		WN 141 / 1 / 1
IC 2	1	IC	µA 741 C		WN 141 / 1 / 1
S 1	1	Schalter		Pv. 592 - 8001	
S 2	1	Schalter	2x6 Kont., Schaltstellungen o. Anschlag, Kont. Au Ni mit kleinem Drehmoment		Typ 1702 K 1) Achsl = 21 mm
Bu 1	1	Buchse	3 polig		WN 119 / 1 / 5

Serie A + B: 1) Achsl.=25 mm;

Frequenzmarken SGM-21
Frequency markers BN 582

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 1	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 2	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 3	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 4	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 5	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 6	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 7	1	Schichtwid.	330 kΩ / 5 % / K1. 2 / 0309		
R 8	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 9	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 10	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 11	1	Schichtwid.	1,2 kΩ / 5 % / K1. 2 / 0309		
R 12	1	Schichtwid.	1,2 kΩ / 5 % / K1. 2 / 0309		
R 15	1	Schichtwid.	19,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 17	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 19	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 20	1	Schichtwid.	9,76 kΩ / 0,1 % / 0207 / Tk 50		WN 18 / 4 / 1
R 21	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 22	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 23	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 24	1	Schichtwid.	1,5 kΩ / 5 % / K1. 2 / 0309		
R 25	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 28	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 29	1	Schichtwid.	9,76 kΩ / 0,1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 30	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 31	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 32	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 33	1	Schichtwid.	1,5 kΩ / 5 % / K1. 2 / 0309		
R 34	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 37	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 38	1	Schichtwid.	9,76 kΩ / 0,1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 39	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 40	1	Schichtwid.	470 kΩ / 5 % / K1. 2 / 0309		
R 41	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 42	1	Schichtwid.	1,5 kΩ / 5 % / K1. 2 / 0309		
R 43	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 47	1	Schichtwid.	5,1 kΩ / 5 % / K1. 2 / 0309		
R 48	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 49	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 52	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 53	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 56	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 57	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 70	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 71	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 72	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 73	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 74	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 75	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 76	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 77	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 78	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 79	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 80	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 81	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 82	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 83	1	Schichtwid.	1,2 kΩ / 5 % / K1. 2 / 0309		
R 84	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 85	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 86	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 87	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 88	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 89	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 90	1	Schichtwid.	15 Ω / 5 % / K1. 2 / 0309		
R 91	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 96	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 97	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 98	1	Schichtwid.	820 Ω / 5 % / K1. 2 / 0309		
R 99	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 100	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 101	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 102	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 103	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 106	1	Schichtwid.	820 Ω / 5 % / K1. 2 / 0309		
R 107	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 108	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 109	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 110	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
111	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 113	1	Schichtwid.	820 Ω / 5 % / K1. 2 / 0309		
R 114	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 115	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 116	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 117	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 118	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 121	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		
R 122	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 123	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		
R 124	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 125	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		

Horizontale Referenzlinien SGR-21
Horizontal reference traces BN 583

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 126	1	Schichtwid.	12 kΩ / 5 % / MK 2 / 0309		
P 1...3	je1	Drahtdrehwid.	20 kΩ / lin / 3 W	Typ 840C, Vitrohm, 28,6 x 27,2 Buchs=5,8-32 NGF,Achs-ø=6,4 mm,Acnsl=52mm	
		Schichtdrehwid.	2,5 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
		Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 8	1	Schichtdrehwid.	10 kΩ / lin / 0,15 W		Nr. 61504-000 Preh Knopffarbe: grau
C 1	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 2	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 3	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 4	1	Kf - Kond.	33 nF / 20 % / 250 V =		WN 110 / 3 / 7
C 5	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 6	1	Kf - Kond.	33 nF / 20 % / 250 V =		WN 110 / 3 / 7
C 8	1	Ker. Kond.	10 nF / +100 -20 % / 40 V=		WN 110 / 2 / 10
C 9	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C10...12	je1	Ker. Kond.	10 nF / +100 -20 % / 40 V=		WN 110 / 2 / 10
C 15	1	Ker. Kond.	4,7 nF / +50 -20 % / 50 V=		Sp 5 U R 10000 R1G
C 16	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 19	1	Ker. Kond.	4,7 nF / +50 -20 % / 100 V =		Sp 5 U R 10000 R1G
C 19	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 21	1	Ker. Kond.	4,7 nF / +50 -20 % / 50 V =		Sp 5 U R 10000 R1G
C 22	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 24	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C		Ker. Kond.	68 pF / 2 % / N 150		WN 110 / 2 / 9
		Ker. Kond.	33 pF / 2 % / N 150		WN 110 / 2 / 9
C 27	1	Ker. Kond.	68 pF / 2 % / N 150		WN 110 / 2 / 9
C 28	1	Ker. Kond.	33 pF / 2 % / N 150		WN 110 / 2 / 9
C 30	1	Ker. Kond.	68 pF / 2 % / N 150		WN 110 / 2 / 9
C 31	1	Ker. Kond.	33 pF / 2 % / N 150		WN 11 / 2 / 9
C 32	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 33	1	Elko	3,3 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 34	1	Elko	33 µF / 20 % / 10 V =		WN 110 / 5 / 61
C 35	1	Ker. Kond.	4,7 nF / +50 -20 % / 50 V =		Sp 5 U R 10000 R1G
C 36	1	Ker. Kond.	56 pF / 2 % / N 150		WN 110 / 2 / 9
C 37	1	Ker. Kond.	22 pF / 2 % / N 150		WN 11 / 2 / 9
C 38	1	Kf - Kond.	470 pF / 2 % / 160 V =		WN 110 / 3 / 1
C 41	1	Ker. Kond.	4,7 nF / +50 -20 % / 50 V =		Sp 5 U R 10000 R1G
C 43	1	Ker. Kond.	4,7 nF / +50 -20 % / 50 V =		Sp 5 U R 10000 R1G
C 44	1	Ker. Kond.	56 pF / 2 % / N 150		WN 11 / 2 / 9

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
C 45	1	Ker. Kond.	22 pF / 2 % / N 150		WN 11 / 2 / 9
C 46	1	Kf - Kond.	470 pF / 2 % / 160 V =		WN 110 / 3 / 1
C 48	1	Ker. Kond.	4,7 nF / +50 -20 % / 50 V =		Sp 5 U R 10000 R1G
C 49	1	Ker. Kond.	56 pF / 2 % / N 150		WN 110 / 2 / 9
C 50	1	Ker. Kond.	22 pF / 2 % / N 150		WN 110 / 2 / 9
C 51	1	Kf - Kond.	470 pF / 2 % / 160 V =		WN 110 / 3 / 1
T 1	1	Transistor	BCY 59 D		nur ITT oder ausges. nach Bw. 583-9360
T 2	1	Transistor	BCY 78 D		
T 3	1	Transistor	BCY 59 D		nur ITT oder ausges. nach Bw. 583-9360
T 4	1	Transistor	BCY 78 D		
T 5	1	Transistor	BCY 59 D		nur ITT oder ausges. nach Bw. 583-9360
T 6...9	je1	Transistor	BCY 78 D		
T 13	1	Transistor	BCY 59 D		
T 14	1	Transistor	BCY 78 D		
T 15	1	Transistor	BCY 78 D		
T 16	1	Transistor	BSX 93		
T 17	1	Transistor	BSX 88		
T 18	1	Transistor	BSX 93		
T 19	1	Transistor	2 N 3251		
T 20	1	Transistor	BSX 88		
T 23	1	Transistor	BCY 78 D		
T 24	1	Transistor	BSX 93		
T 25	1	Transistor	BSX 88		
T 26	1	Transistor	BSX 93		
T 27	1	Transistor	2 N 3251		
T 28	1	Transistor	BSX 88		
T 31	1	Transistor	BCY 78 D		
T 32	1	Transistor	BSX 93		
T 33	1	Transistor	BSX 88		
T 34	1	Transistor	BSX 93		
T 35	1	Transistor	2 N 3251		
T 36	1	Transistor	BSX 88		
G1 1	1	Diode	1 N 4448		
G1 2	1	Diode	1 N 4448		
G1 3	1	Z - Diode	ZPD 5,1 rt		WN 140 / 3 / 2
G1 4	1	Z - Diode	ZPD 5,1 rt		WN 140 / 3 / 2
G1 5	1	Diode	1 N 4448		
G1 6	1	Diode	1 N 4448		
G1 7	1	Diode	1 N 4448		
G1 9	1	Z - Diode	ZPD 3,3		

Horizontale Referenzlinien SGR-21
Horizontal reference traces BN 583

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
G1 11	1	Diode	1 N 4448		
G1 12	1	Diode	1 N 4448		
G1 13	1	Diode	1 N 4448		
G1 14	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
G1 17	1	Diode	1 N 4448		
G1 18	1	Z - Diode	ZPD 3,3		
G1 19	1	Z - Diode	ZPD 5,1		
G120 .23	je1	Diode	1 N 4448		
G1 24	1	Z - Diode	ZPD 6,2		
G1 25	1	Diode	1 N 4448		
G1 26	1	Diode	1 N 4448		
G1 27	1	Diode	1 N 4448		
JC 1	1	JC	LM 311 H		
JC 2	1	JC	µA 741 C		WN 141 / 1 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
JC 3	1	JC	LM 311 H		
JC 4	1	JC	µA 741 C		WN 141 / 1 / 1
JC 5	1	JC	µA 741 C		WN 141 / 1 / 1
JC 6	1	JC	µA 741 C		WN 141
JC 7	1	JC	µA 741 C		WN 141
JC 8	1	JC	µA 741 C		WN 141 / 1 / L
JC 11	1	JC	µA 710		USB 7710 31 X
JC 12	1	JC	µA 710		USB 7710 31 X
JC 13	1	JC	µA 710		USB 7710 31 X
Ü 1	1	Übertrager		Bv. 580 - 7726	
S 1	1	Schalter		Bv. 592 - 8001	
S 2	1	Schalter	2 x u, MS 70 ab ... hartver... Hp = Sonderqualität		Typ KMF Fa. EBE

Horizontale Referenzlinien SGR-21
Horizontal reference traces BN 583

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 1	1	Schichtwid.	1 kw / 5 % / K1. 2 / 0309		
R 3	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 4	1	Schichtwid.	12,1 kΩ / 1 % / Tk.50 / 0207		WN 18 / 4 / 1
R 5	1	Schichtwid.	10 kw / 5 % / K1. 2 / 0309		
R 6	1	Schichtwid.	3,3 kΩ / 5 % / K1. 2 / 0309		
R 7	1	Schichtwid.	6,81 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 8	1	Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
R 9	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 10	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 11	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 12	1	Schichtwid.	9,76 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 13	1	Schichtwid.	1,91 kw / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 14	1	Schichtwid.	1,91 kw / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 15	1	Schichtwid.	9,76 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 16	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 17	1	Schichtwid.	10 kw / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 18	1	Schichtwid.	10 kΩ / 1 % / Tk.50 / 0207		WN 18 / 4 / 1
R 19	1	Schichtwid.	820 Ω / 5 % / K1. 2 / 0309		
R20 .25	je1	Schichtwid.	1,8 kΩ / 5 % / K1. 2 / 0309		
R 29	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 30	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 31	1	Schichtwid.	1,2 kΩ / 5 % / K1. 2 / 0309		
R 32	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 33	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 34	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 35	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 36	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 37	1	Schichtwid.	6,8 kw / 5 % / K1. 2 / 0309		
R 38	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 39	1	Schichtwid.	5,8 kw / 5 % / K1. 2 / 0309		
R 40	1	Schichtwid.	68 w / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 41	1	Schichtwid.	27 kΩ / 5 % / K1. 2 / 0309		
R 42	1	Schichtwid.	27 kΩ / 5 % / K1. 2 / 0309		
R 43	1	Schichtwid.	27 kw / 5 % / K1. 2 / 0309		
R 44	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 45	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 46	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 50	1	Schichtwid.	180 Ω / 5 % / K1. 2 / 0309		
R 51	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 52	1	Schichtwid.	180 Ω / 5 % / K1. 2 / 0309		
R 53	1	Schichtwid	22 kw / 5 % / K1. 2 / 0309		
R 54	1	Schichtwid.	180 Ω / 5 % / K1. 2 / 0309		
R 55	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 56	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 57	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 58	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 59	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 60	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 61	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 62	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 63	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 64	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 65	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 66	1	Schichtwid.	10 kw / 5 % / K1. 2 / 0309		
R 67	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R70...72	je1	Schichtwid.	680 kΩ / 5 % / K1. 2 / 0309		
R73...75	je1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		

Vertikale Referenzlinien SGR-22
Vertical reference traces BN 592

Fortsetzung (continued)

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 76	1	Schichtwid.	5,6 kΩ / 5 % / Kl. 2 / 0309		
R 77	1	Schichtwid.	220 kΩ / 5 % / Kl. 2 / 0309		
	1	Schichtwid.	3,9 kΩ / 5 % / Kl. 2 / 0309		
R 81	1	Schichtwid.	6,8 kΩ / 5 % / Kl. 2 / 0309		
R 82	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
R 83	1	Schichtwid.	5,6 kΩ / 5 % / Kl. 2 / 0309		
R 84	1	Schichtwid.	22 kΩ / 5 % / Kl. 2 / 0309		
R 85	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0309		
R 86	1	Schichtwid.	100 kΩ / 5 % / Kl. 2 / 0309		
JC 1	1	JC	µA 741 C		WN 141 / 1 / 1
JC 2	1	JC	µA 741 C		WN 141 / 1 / 1
S 1	1	Schalter	2 u.Kont.MS 70x6 µm hartverg. Hp = Sonderqualität		Typ KMF Fa. EBE
S 2	1	Schalter		Bv. 592 - 8001	
P 1	1	Drahtdrehwid.	5 kΩ / lin / 3 W	Typ 8400, Vitroha, 28,5 x 22,2, Buchse=3/8-32 NEF Achs.ø =6,4 mm, Achsl =52 mm	
P 2	1	Drahtdrehwid.	5 kΩ / lin / 3 W	Typ 8400, Vitroha, 28,6 x 22,2, Buchse=3/8-32 NEF Achs.ø =6,4 mm, Achsl ≤52 mm	
P 3	1	Drahtdrehwid.	5 kΩ / lin / 3 W	Typ 8400, Vitroha, 28,6 x 22,2, Buchse=3/8-32 NEF Achs.ø =6,4 mm, Achsl = 52 mm	
P 4	1	Schichtdrehwid.	1 MΩ / lin / 0,15 W		Nr.F1504 - 000 Freh Knopffarbe: grau
C 1	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 2	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 3	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 4	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 5	1	Kf - Kond.	0,33 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 6	1	Kf - Kond.	0,33 µF / 20 % / 100 V =		WN 110 / 3 / 7
		Kf - Kond.	0,33 µF / 20 % / 100 V =		WN 110 / 3 / 7
		Kf - Kond.	0,33 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 9	1	Kf - Kond.	3,9 nF / 5 % / 400 V =		KT 1800 - 239 / 4 Ero
10	1	Kf - Kond.	3,9 nF / 5 % / 400 V =		KT 1800 - 239 / 4 Ero
G1 1	1	Diode	1 N 4448		
G1 2	1	Z - Diode	ZPD 7,5		
G1 3	1	Diode	1 N 4448		
G1 4	1	Diode	1 N 4448		
G1 5	1	Z - Diode	ZPD 5,1 rt		WN 140 / [illegible] 2
G1 6	1	Z - Diode	ZPD 6,2		
G1 7	1	Diode	1 N 4448		
G1 8	1	Diode	1 N 4448		
G1 9	1	Diode	1 N 4448		
G1 10	1	Diode	1 N 4448		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
G1 11	1	Diode	1 N 4448		
G1 12	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
G1 16	1	Diode	1 N 4448		
G1 17	1	Diode	1 N 4448		
G1 18	1	Diode	1 N 4448		
G1 21	1	Diode	1 N 4448		
G1 22	1	Diode	1 N 4448		
G1 23	1	Diode	1 N 4448		
G1 24	1	Z - Diode	ZPD 6,2		
G1 25	1	Diode	1 N 4448		
G1 26	1	Diode	1 N 4448		
T 1	1	Transistor	BFY 81		
T 3	1	Transistor	BCY 59 D		
T 4	1	Transistor	BCY 78 D		
T 5	1	Transistor	BCY 59 D		
T 6	1	Transistor	BCY 59 D		
T 7	1	Transistor	BCY 59 D		
T 8	1	Transistor	BCY 78 D		
T 9	1	Transistor	BFY 81		
T 11	1	Transistor	BCY 59 D		
T 12	1	Transistor	BCY 78 D		
T 13	1	Transistor	BCY 59 D		
T 14	1	Transistor	BCY 59 D		
T 15	1	Transistor	BCY 59 D		
T 16	1	Transistor	BCY 78 D		
T 17	1	Transistor	BFY 81		
T 19	1	Transistor	BCY 59 D		
T 20	1	Transistor	BCY 78 D		
T 21	1	Transistor	BCY 59 D		
T 22	1	Transistor	BCY 59 D		
T 23	1	Transistor	BCY 59 D		
T 24	1	Transistor	BCY 78 D		
T 26	1	Transistor	BCY 59 D		
T 27	1	Transistor	BCY 59 D		
T 28	1	Transistor	BCY 78 D		

Vertikale Referenzlinien SGR-22
Vertical reference traces BN 592

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 1	1	Schichtwid.	49,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 2	1	Schichtwid.	49,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 3	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 4	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 5	1	Schichtwid.	49,9 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 6	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 7	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 8	1	Schichtwid.	10 kΩ /0,25 %/ Tk 50 / 0207		WN 18 / 4 / 1
R 9	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 10	1	Schichtwid.	10 kΩ /0,25 %/ Tk 50 / 0207		WN 18 / 4 / 1
R 11	1	Schichtwid.	47 Ω / 5 % / K1. 2 / 0309		
R 12	1	Schichtwid.	56 kΩ / 5 % / K1. 2 / 0309		
R 16	1	Schichtwid.	15 Ω / 5 % / K1. 2 / 0309		
R 17	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 18	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 19	1	Schichtwid.	2,7 kΩ / 5 % / K1. 2 / 0309		
R 20	1	Schichtwid.	4,99 kΩ / 0,25 % / Tk 50/ 0207		WN 18 / 4 / 1
R 21	1	Schichtwid.	4,99 kΩ / 0,25 % / Tk 50/ 0207		WN 18 / 4 / 1
R 26	1	Schichtwid.	56 Ω / 5 % / K1. 2 / 0309		
R 27	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 28	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 29	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 31	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 32	1	Schichtwid.	680 Ω / 5 % / K1. 2 / 0309		
R 33	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 34	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 35	1	Schichtwid.	12,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 36	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 37	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 38	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 39	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 40	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 41	1	Schichtwid.	33 kΩ / 5 % / K1. 2 / 0309		
R 42	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 43	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 44	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 45	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 46	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 51	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 52	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 53	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 55	1	Schichtwid.	220 Ω / 5 % / K1. 2 / 0309		
R 56	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 57	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 58	1	Schichtwid.	5,11 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 59	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 60	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 61	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 62	1	Schichtwid.	1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 67	1	Schichtwid.	1,5 kΩ / 5 % / K1 2 / 0309		
R 68	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 69	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 70	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 72	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 76	1	Schichtwid.	82 Ω / 5 % / K1. 2 / 0309		
R 77	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 78	1	Schichtwid.	17,4 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 81	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 82	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 84	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		
R 85	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 86	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 87	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 88	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 89	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 90	1	Schichtwid.	2,15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 91	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 92	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 93	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 94	1	Schichtwid.	23,7 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 95	1	Schichtwid.	2,15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 96	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben / Benennung	Hersteller, Anmerkgn
R 1	1	Schichtdrehwid.	100 Ω / lin / 0,5 W		2 WN 17 / 2 / 8
R 2	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8
R 3	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8
R 4	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
R 5					
R 8	1	Schichtdrehwid.	47k / lin / 0,75 W		62 WTD - K - F - C Nr. 5760 CRL
R 9	1	Schichtdrehwid.	100 Ω / lin / 0,5 W		1 WN 17 / 2 / 8
R 10	1	Schichtdrehwid.	10 kΩ / lkΩ / ± 10 % / lin	Preostat 24, Nr. 65 120-300 Achse=32mm, Buchse=8mm	
R 11	1	Schichtdrehwid.	10 kΩ / lin / 0,3 W	55 u Nr. 600 l = 16 mm, p = 8 mm	
C 1	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 2	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 3	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 4	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 5	1	Ker. Kond.	220 pF / 2 % / N 750		WN 110 / 2 / 9
C 8	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 11	1	Ker. Kond.	47 pF / 2 % / NPO		WN 110 / 2 / 9
C 12	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 13	1	Elko	1 µF / 20 % / 35 V =		WN 110 / 5 / 61
C 14	1	Ker. Kond.	100 pF / 2 % / N 750		WN 110 / 2 / 9
C 15	1	Ker. Kond.	33 pF / 2 % / NPO		WN 110 / 2 / 9
C 16	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 17	1	Ker. Kond.	22 pF / 2 % / NPO		WN 110 / 2 / 9
C 18	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 19	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 20	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 25	1	Elko	1 µF / 20 % / 35 V =		WN 110 / 5 / 61
C 26	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 28	1	Elko	1 µF / 20 % / 35 V =		WN 110 / 5 / 61
C 29	1	Ker. Kond.	220 pF / 2 % / N 750		WN 110 / 2 / 9
C 30	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 31	1	Ker. Kond.	2,2 nF / 10 % / K 2000		WN 110 / 2 / 10
C 32	1	Ker. Kond.	10 nF / -20 +100 % /K 10000		WN 110 / 2 / 10
C 33	1	Ker. Kond.	22 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
JC 1	1	JC	µA 741 C		WN 141 / 1 / 1
JC 2	1	JC	µA 741 C		WN 141 / 1 / 1
JC 3	1	JC	µA 741 C		WN 141 / 1 / 1
JC 4	1	JC	µA 710		No. USB 7710 31x

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben / Benennung	Hersteller, Anmerkgn
T 1	1	Transistor	BCY 78 D		
T 2	1	Transistor	BCY 59 D		
T 3	1	Transistor	BSX 88		
T 4	1	Transistor	2 N 3251		
T 5	1	Transistor	BSX 93		
T 6	1	Transistor	BSX 93		
T 7	1	Transistor	BSX 88		
T 8	1	Transistor	BCY 59 D		
T 12	1	Transistor	BSX 93		
T 13	1	Transistor	BSX 93		
T 14	1	Transistor	BFX 48		
T 15	1	Transistor	2 N 3251		
T 16	1	Transistor	BFY 84		
T 17	1	Transistor	BSX 93		
T 18	1	Transistor	BSX 93		
T 19	1	Transistor	BCY 59 D		
T 20	1	Transistor	2 N 3251		
T 21	1	Transistor	2 N 3251		
T 22	1	Transistor	BSX 93		
G1 1	1	Diode	1 N 4448		
G1 2	1	Diode	1 N 4448		
G1 3	1	Diode	1 N 4448		
G1 4	1	Diode	1 N 4448		
G1 5	1	Diode	1 N 4448		
G1 6	1	Diode	1 N 4448		
G1 7	1	Z - Diode	ZPD 3,3		
G1 8	1	Z - Diode	ZPD 3,3		
G1 9	1	Z - Diode	ZPD 6,2		
G1 10	1	Z - Diode	ZPD 6,2	U_Z=6,2V±2% bei I_Z = 5 mA	
G1 13	1	Z - Diode	ZPD 12		
G1 14	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
G1 16	1	Diode	1 N 4448		
G1 17	1	Diode	1 N 4448		
G1 18	1	Z - Diode	ZPD 7,5		
G1 19	1	Diode	1 N 4448		
G1 20	1	Z - Diode	ZE 2		
L 1	1	Spule	75 µH / 0,5 A		B 82501 - A - C 36 Siemens
Bu 1	1	Buchse			WN 119 / 1 / 5
Ü 1	1	Übertrager		Bv. 580 - 7726	
S 1	1	Schalter	2u, kont. MS 704bum hartvera. Mg-Sondergualität		KMS Fa. EBE

Y-Verstärker SGV-21
Y-amplifier BN 580

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 26	1	Schichtwid.	56 Ω / 5 % / K1. 2 / 0309		
R 27	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 28	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 29	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 31	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 32	1	Schichtwid.	680 Ω / 5 % / K1. 2 / 0309		
R 33	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 34	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 35	1	Schichtwid.	12,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 36	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 37	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 38	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 39	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 40	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 41	1	Schichtwid.	33 kΩ / 5 % / K1. 2 / 0309		
R 42	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 43	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 44	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
[illegible]	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
[illegible]	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 51	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 52	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 53	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 55	1	Schichtwid.	220 Ω / 5 % / K1. 2 / 0309		
R 56	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 57	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 58	1	Schichtwid.	5,11 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 59	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 60	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 61	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 62	1	Schichtwid.	1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 67	1	Schichtwid.	1,5 kΩ / 5 % / K1. 2 / 0309		
R 68	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 69	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 70	1	Schichtwid.	19 kΩ / 5 % / K1. 2 / 0309		
R 72	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 76	1	Schichtwid.	82 Ω / 5 % / K1. 2 / 0309		
R 77	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 78	1	Schichtwid.	17,4 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 81	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 82	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Bestellangaben: Elektrische Werte	Benennung	Hersteller, Anmerkgn
R 84	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		
R 85	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 86	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 87	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 88	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 89	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 90	1	Schichtwid.	2,15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 91	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 92	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 93	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 94	1	Schichtwid.	23,7 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 95	1	Schichtwid.	2,15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 96	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
P 8	1	Schichtdrehwid.	47 Ω / lin / 0,5 W		62 WTD - K - P - C Nr. 5760 CRL
P 9	1	Schichtdrehwid.	100 Ω / lin / 0,5 W		1 WN 17 / 2 / 8
P 10	1	Schichtdrehwid.	10 kΩ / lin / 1kΩ ± 10 % / lin		Preostat 24,Nr.65 120-000 Achs1=32mm,Buchs1=8mm
P 11	1	Schichtdrehwid.	10 kΩ / lin / .3 W		Typ 8400, Vitrohm, 28,6 x 22,2 Buchse=3/8-32 NEF,Achs=6,4mm,Achs1=20mm
C 8	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 11	1	Ker. Kond.	47 pF / 2 % / NPO		WN 110 / 2 / 9
C 12	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 13	1	Elko	1 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 14	1	Ker. Kond.	100 pF / 2 % / N 750		WN 110 / 2 / 9
C 15	1	Ker. Kond.	33 pF / 2 % / NPO		WN 110 / 2 / 9
C 16	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 17	1	Ker. Kond.	22 pF / 2 % / NPO		WN 110 / 2 / 9
C 18	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 19	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 20	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 25	1	Elko	1 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 26	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 28	1	Elko	1 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 29	1	Ker. Kond.	220 pF / 2 % / N 750		WN 110 / 2 / 9
C 30	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 31	1	Ker. Kond.	2,2 nF / 10 % / K 2000		WN 110 / 2 / 10
C 32	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 33	1	Ker. Kond.	22 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
U 1	1	Übertrager		Bv. 580 - 7726	

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
G1 5	1	Diode	1 N 4448		
G1 6	1	Diode	1 N 4448		
G1 7	1	Z - Diode	ZPD 3,3		
G1 8	1	Z - Diode	ZPD 3,3		
G1 9	1	Z - Diode	ZPD 6,2		
G1 10	1	Z - Diode	ZPD 6,2 U_Z= 6,2 V ± 2 % bei I_Z = 5 mA		
G1 13	1	Z - Diode	ZPD 12		
G1 14	1	Diode	1 N 4448		
G1 15	1	Diode	1 N 4448		
G1 16	1	Diode	1 N 4448		
G1 17	1	Diode	1 N 4448		
G1 18	1	Z - Diode	ZPD 7,5		
G1 19	1	Diode	1 N 4448		
G1 20	1	Z - Diode	ZE 2		
JC 4	1	JC	µA 710		No. U58 7710 312

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
T 1	1	Transistor	BCY 78 D		
T 2	1	Transistor	BCY 59 D		
T 3	1	Transistor	BSX 88		
T 4	1	Transistor	2 N 3251		
T 5	1	Transistor	BSX 93		
T 6	1	Transistor	BSX 93		
T 7	1	Transistor	BSX 88		
T 8	1	Transistor	BCY 59 D		
T 12	1	Transistor	BSX 93		
T 13	1	Transistor	BSX 93		
T 14	1	Transistor	BFX 48		
T 15	1	Transistor	2 N 3251		
T 16	1	Transistor	BFY 84		
T 17	1	Transistor	BSX 93		
T 18	1	Transistor	BSX 93		
T 19	1	Transistor	BCY 59 D		
T 20	1	Transistor	2 N 3251		
T 21	1	Transistor	2 N 3251		
T 22	1	Transistor	BSX 93		

Verstärker SGV-22 ①
Amplifier BN 591

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R		Schichtwid.	5,6 kΩ / 5 % / K1. 2 / 0309		
		Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 203	1	Schichtwid.	464 Ω / 1 % / K1.0,5 / 0309		WW 18 / 1 / 3
R 204	1	Schichtwid.	82 kΩ / 5 % / K1. 2 / 0309		
R 205	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 206	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 207	1	Schichtwid.	2,05 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 208	1	Schichtwid.	560 Ω / 5 % / K1. 2 / 0309		
R 209	1	Schichtwid.	1,8 kΩ / 5 % / K1. 2 / 0309		
R 210	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 211	1	Schichtwid.	22 Ω / 5 % / K1. 2 / 0309		
R 212	1	Schichtwid.	22 Ω / 5 % / K1. 2 / 0309		
R 213	1	Schichtwid.	294 Ω / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 214	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 215	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 216	1	Schichtwid.	3,3 kΩ / 5 % / K1. 2 / 0309		
R 217	1	Schichtwid.	1,5 kΩ / 5 % / K1. 2 / 0309		
R 218	1	Schichtwid.	180 kΩ / 5 % / K1. 2 / 0309		
R 219	1	Schichtwid.	56 kΩ / 5 % / K1. 2 / 0309		
R 220	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 221	1	Schichtwid.	560 Ω / 5 % / K1. 2 / 0309		
R 222	1	Schichtwid.	150 Ω / 5 % / K1. 2 / 0309		
R 223	1	Schichtwid.	39 kΩ / 5 % / K1. 2 / 0309		
R 224	1	Schichtwid.	560 Ω / 5 % / K1. 2 / 0309		
R 225	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		
R 226	1	Schichtwid.	56 Ω / 5 % / K1. 2 / 0309		
R	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
		Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 229	1	Schichtwid.	56 Ω / 5 % / K1. 2 / 0309		
R 230	1	Schichtwid.	56 Ω / 5 % / K1. 2 / 0309		
R 231	1	Schichtwid.	100 kΩ / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 240	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 241	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 242	1	Schichtwid.	180 Ω / 5 % / K1. 2 / 0309		
R 243	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 244	1	Schichtwid.	33 kΩ / 5 % / K1. 2 / 0309		
R 245	1	Drahtwid.	47 Ω	Bv. 591 - 7901	
R 246	1	Schichtwid.	402 Ω / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 248	1	Schichtwid.	27,4 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 249	1	Schichtwid.	27,4 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 250	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 251	1	Schichtwid.	820 Ω / 5 % / K1. 2 / 0309		
R 252	1	Schichtwid.	232 Ω / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 253	1	Schichtwid.	20,5 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 254	1	Schichtwid.	432 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 255	1	Schichtwid.	47 Ω / 5 % / K1. 2 / 0309		
R 256	1	Schichtwid.	270 Ω / 5 % / K1. 2 / 0309		
R 257	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 258	1	Schichtwid.	475 Ω / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 259	1	Schichtwid.	220 Ω / 5 % / K1. 2 / 0309		
R 260	1	Schichtwid.	150 Ω / 5 % / K1. 2 / 0309		
R 261	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 262	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1
R 263	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 264	1	Schichtwid.	10 kΩ / 0,1 % / Tk 50 /0207		WW 18 / 4 / 1
R 265	1	Schichtwid.	10 kΩ / 0,1 % / Tk 50 /0207		WW 18 / 4 / 1
R 266	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 267	1	Schichtwid.	47 Ω / 5 % / K1. 2 / 0309		
R 268	1	Schichtwid.	6,04 kΩ / 1 % / Tk 50 / 0207		WW 18 / 4 / 1

Logarithmierer SGV-22 ②
Logarithmizer BN 591

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
P 201	1	Schichtdrehwid.	100 kW / 11n / 0,5 W		1 WN 17 / 2 / 8
P 202	1	Schichtdrehwid.	100 kW / 11n / 0,5 W		1 WN 17 / 2 / 8
P 203	1	Schichtdrehwid.	250 Ω / 11n / 1 W		1 WN 17 / 2 / 6
P 204	1	Schichtdrehwid.	100 Ω / 11n / 1 W		1 WN 17 / 2 / 6
P 205	1	Schichtdrehwid.	10 kΩ / 11n / 0,5 W		1 WN 17 / 2 / 8
C 202	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 203	1	Kf - Kond.	1,5 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 204	1	Elko	1 µF / 20 % / 35 V =		WN 110 / 5 / 61
C 205	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 206	1	Kf - Kond.	2,2 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 207	1	Kf - Kond.	120 pF / 2 % / 160 V =		WN 110 / 3 / 1
C 208	1	Kf - Kond.	0,33 µF / 20 % / 63 V =		B 32110 - F 9334-M Siemens
C 209	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 210	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 211	1	Kf - Kond.	1,5 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 212	1	Kf - Kond.	680 pF / 2 % / 160 V =		WN 110 / 3 / 1
C 213	1	Elko	47 µF / 20 % / 6,3 V =		WN 110 / 5 / 61
C 214	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 215	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 216	1	Kf - Kond.	390 pF / 2 % / 160 V =		WN 110 / 3 / 1
C 217	1	Kf - Kond.	2,2 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 218	1	Kf - Kond.	1 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 219	1	Elko	3,3 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 220	1	Elko	3,3 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 221	1	Ker. Kond.	150 pF / 2 % / N 150		WN 110 / 2 / 9
C 224	1	Kf - Kond.	1 µF / 10 % / 100 V =		WN 110 / 3 / 6
C 225	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 226	1	Elko	22 µF / 20 % / 16 V =		WN 110 / 5 / 61
C 227	1	Kf - Kond.	1 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 228	1	Kf - Kond.	1 nF / 2 % / 160 V =		WN 110 / 3 / 1
C 229	1	Ker. Kond.	2,7 pF / ± 0,25 pF / P 100		WN 110 / 2 / 9
C 230	1	Kf - Kond.	0,22 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 231	1	Kf - Kond.	0,33 µF / 20 % / 100 V =		WN 110 / 3 / 7
C 232	1	Kf - Kond.	22 nF / 20 % / 400 V =		WN 110 / 3 / 7
S 201	1	Schalter	2 x u,MS 70 + 6 µm hartverg. Hp - Sonderqualität		Typ KNF EBE
S 202	1	Schalter	2 x u,MS 70 + 6 µm hartverg. Hp - Sonderqualität		Typ KNF EBE
St 201	1	Stecker B			WN 119 / 8 / 3
St 202	1	Stecker B			WN 119 / 8 / 3

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
L 201	1	Spule		Bv. 591 - 7826	
L 202	1	Spule		Bv. 591 - 7827	
Ü 201	1	Übertrager		Bv. 591 - 7729.1	
G1 201	1	Diode	1 N 4448		
G1 202	1	Diode	1 N 4448		
G1 203	1	Diode	1 N 4448		
G1 204	1	Diode	1 N 4448		
G1 205	1	Z - Diode	ZPD 8,2		
G1 206	1	Z - Diode	ZE 1,5		
G1 207	1	Diode	1 N 4448		
G1 209	1	Diode	HP 5082 - 2800		
G1 210	1	Diode	HP 5082 - 2800		
G1 211	1	Diode	1 N 4448		
G1 212	1	Diode	1 N 4448		
G1 213	1	Diode	1 N 4448		
G1 214	1	Z - Diode	ZPD 8,2		
G1 215	1	Z - Diode	ZE 1,5		
T 201	1	Transistor	BFX 93		
T 202	1	Transistor	BCY 78 D		
T 203	1	Transistor	BCY 59 D		
T 204	1	Transistor	2 N 4221		
T 205	1	Transistor	BCY 78 D		
T 206	1	Transistor	BCY 59 D		
T 207	1	Transistor	BCY 78 D		
T 208	1	Transistor	BCY 59 D		
T 209	1	Transistor	BCY 78 D		
T 210	1	Transistor	BCY 59 D		
T 211	1	Transistor	2 N 3729		
T 212	1	Transistor	2 N 5518		
T 213	1	Transistor	BCY 78 D		
Rel 201	1	Relais			RHD - 12 V SDS_Elektro
Rel 202	1	Relais			RHD - 12 V SDS-Elektro
IC 201	1	IC	µA 709 C		WN 141 / 1 / 1
IC 202	1	IC	µA 715 C		WN 141 / 1 / 1
IC 203	1	IC	µA 748 C		WN 141 / 1 / 1
IC 204	1	IC	µA 741 C		WN 141 / 1 / 1
IC 205	1	IC	µA 741 C		WN 141 / 1 / 1

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
R 301	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 302	1	Schichtwid.	33 kΩ / 5 % / Kl. 2 / 0309		
R 303	1	Schichtwid.	1,2 kΩ / 5 % / Kl. 2 / 0309		
R		Schichtwid.	47 kΩ / 5 % / Kl. 2 / 0309		
R		Schichtwid.	3,9 kΩ / 5 % / Kl.2 / 0309		
R 306	1	Schichtwid.	1 MΩ / 5 % / Kl. 2 / 0309		
R 307	1	Schichtwid.	18 kΩ / 5 % / Kl. 2 / 0309		
R 308	1	Schichtwid.	220 Ω / 5 % / Kl. 2 / 0309		
R 309	1	Schichtwid.	18 Ω / 5 % / Kl. 2 / 0309		
R 310	1	Schichtwid.	562 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 311	1	Schichtwid.	220 kΩ / 5 % / Kl. 2 / 0309		
R 312	1	Schichtwid.	1,43 kΩ / 1 % / Kl.0,5 / 0309		
R 31:	1	Schichtwid.	390 Ω / 5 % / Kl. 2 / 0309		
R 314	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 315	1	Schichtwid.	10 kΩ / 5 % / Kl. 2 / 0309		
R 316	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
R 317	1	Schichtwid.	68 Ω / 5 % / Kl. 2 / 0309		
R 318	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 319	1	Drahtwid.	47 Ω	Bv. 591 - 7901	
R 320	1	Schichtwid.	402 Ω / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 321	1	Schichtwid.	820 Ω / 5 % / Kl. 2 / 0309		
R 322	1	Schichtwid.	47 Ω / 5 % / Kl. 2 / 0309		
R 323	1	Schichtwid.	422 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 324	1	Schichtwid.	1,02 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 325	1	Schichtwid.	150 kΩ / 5 % / Kl. 2 / 0309		
R 326	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 327	1	Schichtwid.	3,3 MΩ / 5 % / Kl. 2 / 0309		
R 328	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R 329	1	Schichtwid.	1 kΩ / 5 % / Kl. 2 / 0309		
R		Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		
R 332	1	Schichtwid.	10 kΩ / 0,25 % / Tk 50/0207		WN 18 / 4 / 1
R 333	1	Schichtwid.	4,7 kΩ / 5 % / Kl. 2 / 0309		
R 334	1	Schichtwid.	10 kΩ / 0,25 % / Tk 50/0207		WN 18 / 4 / 1
R 335	1	Schichtwid.	390 Ω / 5 % / Kl. 2 / 0309		
R 336	1	Schichtwid.	33 Ω / 5 % / Kl. 2 / 0309		
R 337	1	Schichtwid.	39 Ω / 5 % / Kl. 2 / 0309		
R 338	1	Schichtwid.	15 kΩ / 5 % / Kl. 2 / 0309		
P 301	1	Schichtdrehwid.	250 Ω / lin / 0,5 W		2 WN 17 / 2 / 8
P 302	1	Schichtdrehwid.	25 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 303	1	Schichtdrehwid.	250 Ω / lin / 0,5 W		1 WN 17 / 2 / 8
P 304	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8
P 305	1	Schichtdrehwid.	10 kΩ / lin / 0,5 W		1 WN 17 / 2 / 8

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung ·	Hersteller, Anmerkgn
C 301	1	Elko	47 µF / 20 % / 6,3 V -		WN 110 / 5 / 61
C 302	1	Kf - Kond.	0,1 µF / 1 % / 63 V -		WN 110 / 3 / 10
C 303	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7
C 304	1	Kf - Kond.	10 nF / 20 % / 630 V -		WN 110 / 3 / 7
C 305	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 306	1	Elko	0,33 µF / 20 % / 35 V -		ETR 1 0,33 / 35
C 307	1	Elko	6,8 µF / 20 % / 6,3 V -		WN 110 / 5 / 61
C 308	1	Kf - Kond.	0,33 µF / 5 % / 100 V -		MKT 1822 - 433 / 0
C 309	1	Elko	33 µF / 20 % / 10 V -		WN 110 / 5 / 61
C 310	1	Kf - Kond.	4,7 µF / 20 % / 63 V -		B 32110-F 9475 - M Siemens
C 311	1	Kf - Kond.	4,7 µF / 20 % / 63 V -		B 32110-F 9475 - M Siemens
C 312	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 313	1	Kf - Kond.	1 µF / 20 % / 63 V -		B 32110-F 9105 - M Siemens
C 314	1	Kf - Kond.	2,2 µF / 10 % / 100 V -		WN 110 / 3 / 6
C 315	1	Elko	3,3 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 316	1	Trimmer	3 / 10 pF / N 033		10 S - Triko 20 Stettner + Co
C 317	1	Elko	3,3 µF / 20 % / 16 V -		WN 110 / 5 / 61
Ü 301	1	Übertrager		Bv. 591 - 7726.1	
Ü 302	1	Übertrager		Bv. 591 - 7727	
Ü 303	1	Übertrager		Bv. 591 - 7728	
G1 301	1	Z - Diode	ZPD 5,1 rt		WN 140 / 3 / 2
G1 302	1	Diode	1 N 4448		
G1 303	1	Diode	1 N 4448		
G1 304	1	Diode	1 N 4448		
G1 305	1	Z - Diode	ZPD 6,2		
T 301	1	Transistor	BCY 78 D		
T 302	1	Transistor	BCY 78 D		
T 303	1	Transistor	BCY 59 D		
T 304	1	Transistor	BCY 59 D		
T 305	1	Transistor	BCY 59 D		
T 306	1	Transistor	BCY 59 D		
T 307	1	Transistor	BCY 78 D		
T 308	1	Transistor	2 N 3729		
T 309	1	Transistor	BCY 59 D		
JC 301	1	JC	µA 741 C		WN 141 / 1 / 1
JC 302	1	JC	µA 741 C		WN 141 / 1 / 1
JC 303	1	JC	µA 741 C		WN 141 / 1 / 1
S 301	1	Schalter	2 x u,MS 70 + 5 µm hartverg. Kp = Sonderqualität		Typ KMF EBE

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 26	1	Schichtwid.	56 k / 5 % / K1. 2 / 0309		
R 27	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 28	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 29	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 31	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 32	1	Schichtwid.	680 Ω / 5 % / K1. 2 / 0309		
R 33	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 34	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 35	1	Schichtwid.	12,1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 36	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 37	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 38	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 39	1	Schichtwid.	4,7 kΩ / 5 % / K1. 2 / 0309		
R 40	1	Schichtwid.	12 kΩ / 5 % / K1. 2 / 0309		
R 41	1	Schichtwid.	33 kΩ / 5 % / K1. 2 / 0309		
R 42	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 43	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 44	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 45	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 46	1	Schichtwid.	22 kΩ / 5 % / K1. 2 / 0309		
R 51	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 52	1	Schichtwid.	10 kΩ / 5 % / K1. 2 / 0309		
R 53	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 55	1	Schichtwid.	220 Ω / 5 % / K1. 2 / 0309		
R 56	1	Schichtwid.	10 Ω / 5 % / K1. 2 / 0309		
R 57	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 58	1	Schichtwid.	5,11 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 59	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 60	1	Schichtwid.	33 Ω / 5 % / K1. 2 / 0309		
R 61	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 62	1	Schichtwid.	1 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 67	1	Schichtwid.	1,5 kΩ / 5 % / K1. 2 / 0309		
R 68	1	Schichtwid.	120 Ω / 5 % / K1. 2 / 0309		
R 69	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 70	1	Schichtwid.	18 kΩ / 5 % / K1. 2 / 0309		
R 72	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 76	1	Schichtwid.	82 Ω / 5 % / K1. 2 / 0309		
R 77	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 78	1	Schichtwid.	17,4 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 81	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 82	1	Schichtwid.	470 Ω / 5 % / K1. 2 / 0309		
R 84	1	Schichtwid.	8,2 kΩ / 5 % / K1. 2 / 0309		
R 85	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 86	1	Schichtwid.	15 kΩ / 5 % / K1. 2 / 0309		
R 87	1	Schichtwid.	6,8 kΩ / 5 % / K1. 2 / 0309		
R 88	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		

Teil	Stck	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 89	1	Schichtwid.	100 Ω / 5 % / K1. 2 / 0309		
R 90	1	Schichtwid.	2,15 kΩ / 1 % / Tk 50 / 0207		WN 19 / 4 / 1
R 91	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 92	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18
R 93	1	Schichtwid.	4,75 kΩ / 1 % / Tk 50 / 0207		WN 18 /
R 94	1	Schichtwid.	23,7 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 95	1	Schichtwid.	2,15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 96	1	Schichtwid.	10 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 101	1	Schichtwid.	1,8 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 102	1	Schichtwid.	898 kΩ / 0,25 % /Tk 50/ 0411		WN 18 / 4 / 1
R 103	1	Schichtwid.	100 kΩ / 0,1 % / Tk 50/0207		WN 18 / 4 / 1
R 105	1	Schichtwid.	1,8 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 106	1	Schichtwid.	898 kΩ / 0,25 % /Tk 50/ 0411		WN 18 / 4 / 1
R 107	1	Schichtwid.	100 kΩ / 0,1 % /Tk 50 /0207		WN 18 / 4 / 1
R 109	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 110	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 111	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 112	1	Schichtwid.	1 kΩ / 5 % / K1. 2 / 0309		
R 113	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 114	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 115	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 116	1	Schichtwid.	390 Ω / 5 % / K1. 2 / 0309		
R 117	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 118	1	Schichtwid.	5,23 kΩ / 1 % / Tk 50 0207		WN 18
R 119	1	Schichtwid.	3,9 kΩ / 5 % / K1. 2 / 0309		
R 120	1	Schichtwid.	5,23 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 121	1	Schichtwid.	68 Ω / 5 % / K1. 2 / 0309		
R 122	1	Schichtwid.	2,2 kΩ / 5 % / K1. 2 / 0309		
R 123	1	Schichtwid.	15 kΩ / 1 % Tk 50 / 0207		WN 18 / 4 / 1
R 124	1	Schichtwid.	15 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 125	1	Schichtwid.	10 kΩ / 0,25 % /Tk 50/0207		WN 18 / 4 / 1
R 126	1	Schichtwid.	20 kΩ / 0,25 % /Tk 50 /0207		WN 18 / 4 / 1
R 127	1	Schichtwid.	20 kΩ / 0,25 % /Tk 50 /0207		WN 18 / 4 / 1
R 128	1	Schichtwid.	44,8 kΩ / 0,25 % /Tk 50 /0207		WN 18 / 4 / 1
R 129	1	Schichtwid.	4,99 kΩ / 0,5 % / Tk 50 /0207		WN 18 / 4 / 1
R 130	1	Schichtwid.	44,8 kΩ / 0,25 % /Tk 50 /0207		WN 18 / 4 / 1
R 131	1	Schichtwid.	4,99 kΩ / 0,5 % /Tk 50 /0207		WN 18 / 4 / 1
R 132	1	Schichtwid.	49,9 kΩ / 0,5 % /Tk 50 /0207		WN 18 / 4 / 1
R 133	1	Schichtwid.	48,7 kΩ / 1 % / Tk 50 / 0207		WN 18 / 4 / 1
R 134	1	Schichtwid.	47 Ω / 5 % / K1. 2 / 0309		
R 135	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
R 136	1	Schichtwid.	39 Ω / 5 % / K1. 2 / 0309		
P 1	1	Schichtdrehwid.	250 Ω / lin / 0,5 W		2 WN 17 / 2 / 8
P 2	1	Schichtdrehwid.	2,5 kΩ / lin / 0,5 W		2 WN 17 / 2 / 8
P 8	1	Schichtdrehwid.	47 Ω / lin / 0,75 W		62 WTD - K - P - C Nr. 5760
P 9	1	Schichtdrehwid.	100 Ω / lin / 0,5 W		1 WN 17
P 10	1	Schichtdrehwid.	10 kΩ / lkΩ / ± 10 % / lin		Preosta[illegible] Achsl=32mm,Rucnsl=8mm
P 11	1	Schichtdrehwid.	10 kΩ / lin / 0,3 W		55 U Nr. 600 l = 16 mm, ø = 8 mm

Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
C 8	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 11	1	Ker. Kond.	47 pF / 2 % / NPO		WN 110 / 2 / 9
C 12	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 13	1	Elko	1 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 14	1	Ker. Kond.	100 pF / 2 % / N 750		WN 110 / 2 / 9
C 15	1	Ker. Kond.	33 pF / 2 % / NPO		WN 110 / 2 / 9
C 16	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 17	1	Ker. Kond.	22 pF / 2 % / NPO		WN 110 / 2 / 9
C 18	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 19	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 20	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 25	1	Elko	1 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 26	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 28	1	Elko	1 µF / 20 % / 35 V -		WN 110 / 5 / 61
C 29	1	Ker. Kond.	220 pF / 2 % / N 750		WN 110 / 2 / 9
C 30	1	Ker. Kond.	470 pF / 10 % / K 2000		WN 110 / 2 / 10
C 31	1	Ker. Kond.	2,2 nF / 10 % / K 2000		WN 110 / 2 / 10
C 32	1	Ker. Kond.	10 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 33	1	Ker. Kond.	22 nF / -20 +100 % / K 10000		WN 110 / 2 / 10
C 40	1	Ker. Kond.	4,7 pF / ± 0,5 pF / NPO		WN 110 / 2 / 9
C 41	1	Ker. Kond.	27 pF / 2 % / N 150		WN 110 / 2 / 3
ould b					
C 43	1	Ker. Kond.	4,7 pF / ± 0,5 pF / NPO		WN 110 / 2 / 9
C 44	1	Trimmer	10 / 40 pF / N 750		10 S - Trika 20 Stettner & Co.
C 47	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 48	1	Ker. Kond.	1 nF / 10 % / K 2000		WN 110 / 2 / 10
C 49	1	Ker. Kond.	47 pF / 2 % / N 150		WN 110 / 2 / 9
C 50	1	Ker. Kond.	47 pF / 2 % / N 150		WN 110 / 2 / 9
C 51	1	Ker. Kond.	22 pF / 2 % / N 150		WN 110 / 2 / 9
C 52	1	Ker. Kond.	22 pF / 2 % / N 150		WN 110 / 2 / 9
C 53	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
C 54	1	Elko	22 µF / 20 % / 16 V -		WN 110 / 5 / 61
G1 5	1	Diode	1 N 4448		
G1 6	1	Diode	1 N 4448		
G1 7	1	Z - Diode	ZPD 3,3		
G1 8	1	Z - Diode	ZPD 3,3		
G1 9	1	Z - Diode	ZPD 6,2		
G1 10	1	Z - Diode	ZPD 6,2 U_Z=6,2 V ± 2% bei I_Z = 5 mA		
G1 13	1	Z - Diode	ZPD 12		
		Diode	1 N 4448		
		Diode	1 N 4448		
G1 16	1	Diode	1 N 4448		

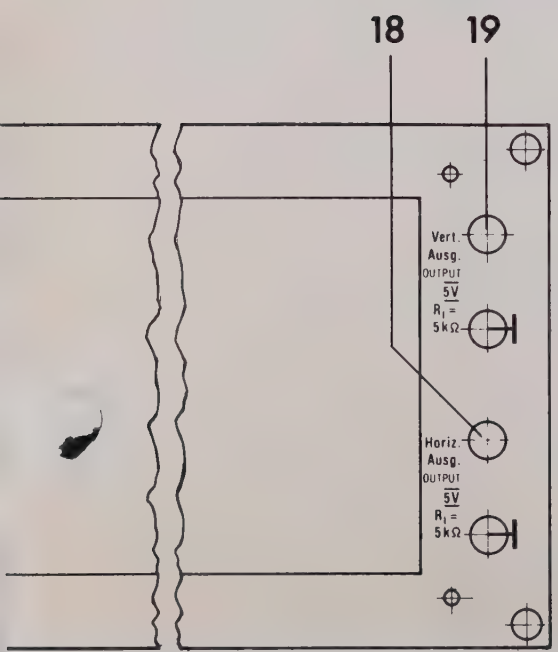
Teil	Stck	Bezeichnung	Bestellangaben Elektrische Werte	Benennung	Hersteller, Anmerkgn
G1 17	1	Diode	1 N 4448		
G1 18	1	Z - Diode	ZPD 7,5		
G1 19	1	Diode	1 N 4448		
G1 20	1	Z - Diode	ZE 2		
G1 21	1	Diode	FD 300		
G1 22	1	Diode	FD 300		
G1 23	1	Diode	FD 300		
G1 24	1	Diode	FD 300		
G1 25	1	Z - Diode	ZPD 2,7		
G1 26	1	Diode	1 N 4448		
G1 27	1	Diode	1 N 4448		
T 1	1	Transistor	BCY 78 D		
T 2	1	Transistor	BCY 59 D		
T 3	1	Transistor	BSX 88		
T 4	1	Transistor	2 N 3251		
T 5	1	Transistor	BSX 93		
T 6	1	Transistor	BSX 93		
T 7	1	Transistor	BSX 88		
T 8	1	Transistor	BCY 59 D		
T 12	1	Transistor	BSX 93		
T 13	1	Transistor	BSX 93		
T 14	1	Transistor	BFX 48		
T 15	1	Transistor	2 N 3251		
T 16	1	Transistor	BFY 84		
T 17	1	Transistor	BSX 93		
T 18	1	Transistor	BSX 93		
T 19	1	Transistor	BCY 59 D		
T 20	1	Transistor	2 N 3251		
T 21	1	Transistor	2 N 3251		
T 22	1	Transistor	BSX 93		
T 26	1	Transistor	2 N 5519		
T 27	1	Transistor	BCY 59 D		
T 28	1	Transistor	BCY 59 D		
T 29	1	Transistor	2 N 5519		
IC 4	1	IC	µA 710		No. U58 7710 31 X
IC 7	1	IC	µA 741 C		WN 141 / 1 / 1
IC 8	1	IC	µA 741 C		WN 141 / 1 / 1
IC 9	1	IC	µA 741 C		WN 141 / 1 / 1
S 1	1	Schalter		Bv. 546 - 8001	
S 2	1	Schalter			4 WN 13 / 5 / 2
Bu 1	1	Buchse	3 polig		WN 119 / 1 / 5
1	1	Übertrager		Bv. 580 - 7726	

Display Unit SG-2

Operating Instructions

Notes
Combination with SGR-21 only possible in bay 8c
Combination with SGR-21 only possible in bay 8c
Contrast adjustment only possible in bay 8 a ×
Contrast adjustment also for SGR-22 ×
× W ay 8 a is not in use, push button on SGR-22 should be depressed and reference traces appear.

-in Units at Definite Places



1 Intensity
Setting the intensity of the cathode beam

2 Raster illumination
Setting the illumination of the raster graticule

3 Lamp
For checking ON-OFF condition of the equipment

4 Power switch
"I" ON, "0" OFF
The power supply is for both the main frame and the Plug-ins

5 Fuse
"Slow-blow 3 A"

6 Voltage selector
To select power line voltage. Selected value appears in window over voltage selector

7 Power line connector
Cable which is provided connects equipment to power line.

8 Connector terminal strip
Terminals 8a to 8e for connecting Plug-ins to main frame

9 Position
4 lamps in the image screen mask indicate the beam position when the scope tube is overdriven.

10 Fastening screws for Plug-ins
Changing a Plug-in:
Loosen the corresponding screw, and push the Plug-in out of the terminal strip, then pull out the Plug-in from the front panel.
Plug-in the other unit using the guides and push backwards so as to engage with contact strip, then tighten screw at back.

11 RWO-5
Connection to Control Oscillator RWO-5.

12 System connector
For connecting a Level Meter.

13 SGV-22 Input
Input of the Logarithmic Amplifier Plug-in SGV-22.

14 SGV-22 Output
Output from the Logarithmic Amplifier Plug-in SGV-22.

15 RU-3
Control pulse for a Relay Change-over Switch RU-3.

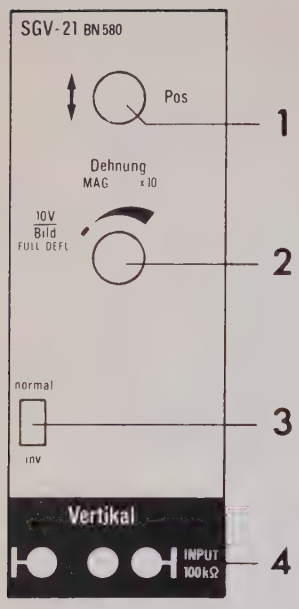
16 SGD-21 Input
Parallel to the input at the front panel of the Discriminator Plug-in SGD-21.

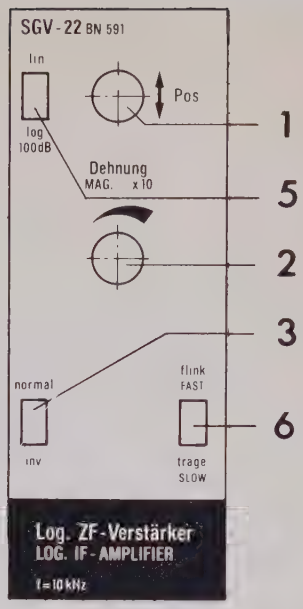
17 PM-5
Connection of the Level Meter PM-5.

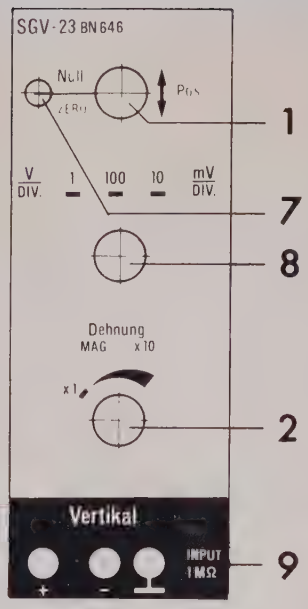
18 Horizontal output
Output of the X signal; V_{pp} = 5 V, Z_{out} = 5 kΩ.

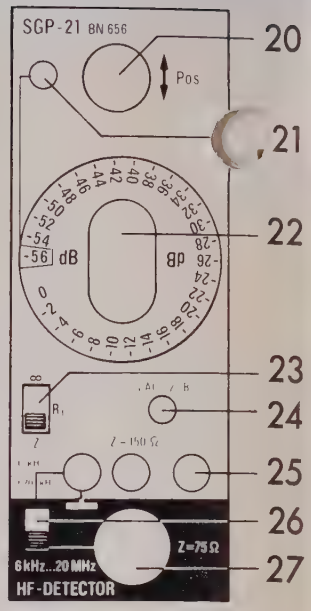
19 Vertical output
Output of the Y signal; V_{pp} = 5 V, Z_{out} = 5 kΩ.

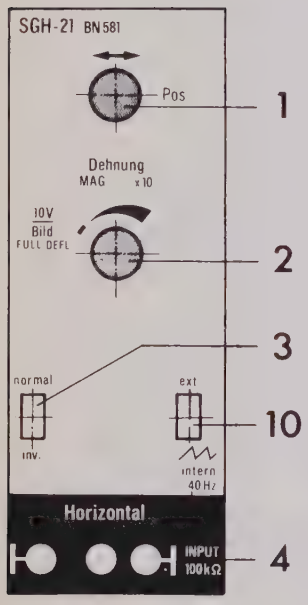
0.2.1.75 2167a

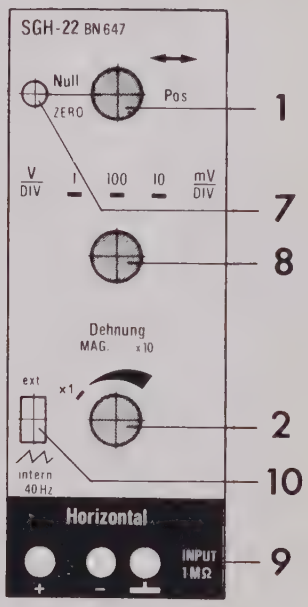

SGV-21 BN 580
Pos
1
Dehnung
MAG x10
10V
Bild
FULL DEFL
2
normal
inv
3
Vertikal
INPUT
100kΩ
4

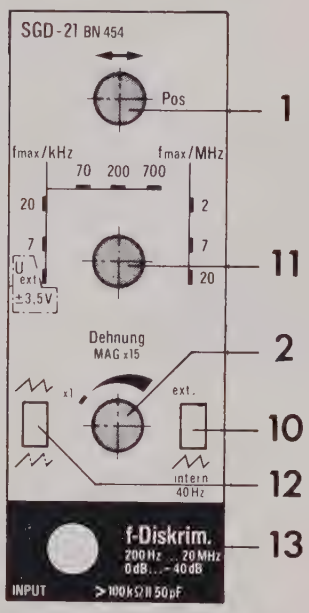

SGV-22 BN 591
lin
log
100dB
Pos
1
Dehnung
MAG. x10
5
2
3
normal
inv
flink
FAST
trage
SLOW
6
Log. ZF-Verstärker
LOG. IF-AMPLIFIER
f=10kHz

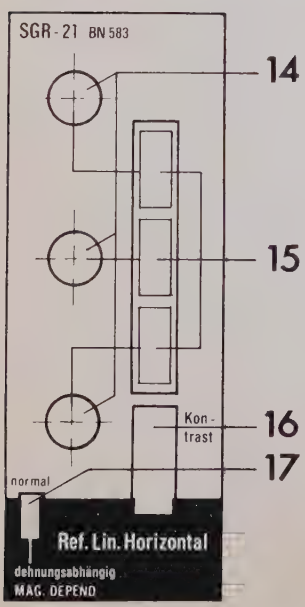

SGV-23 BN 646
Null
ZERO
Pos
1
V
DIV.
1
100
10
mV
DIV.
7
8
Dehnung
MAG x10
x1
2
Vertikal
INPUT
1MΩ
9

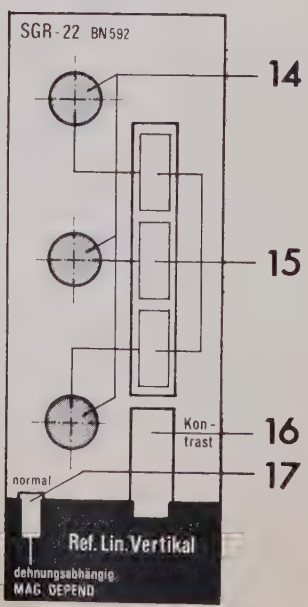

SGP-21 BN 656
Pos
20
21
22
dB
23
24
25
26
Z=75Ω
27
6kHz...20MHz
HF-DETECTOR

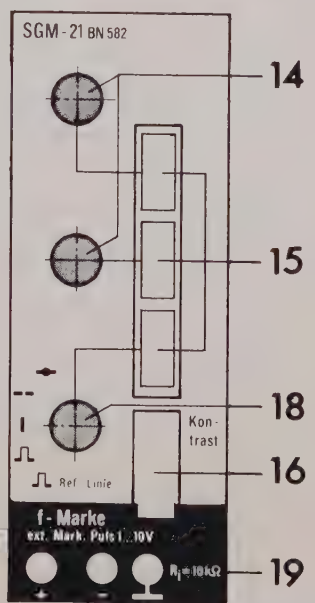

SGH-21 BN 581
Pos
1
Dehnung
MAG x10
10V
Bild
FULL DEFL
2
3
normal
inv.
ext
intern
40Hz
10
Horizontal
INPUT
100kΩ
4

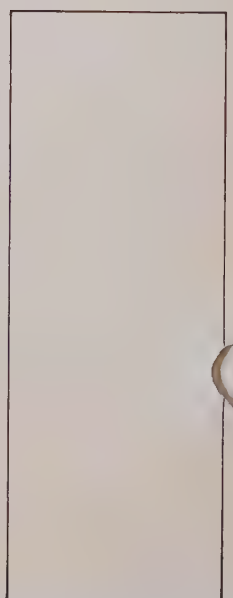

SGH-22 BN 647
Null
ZERO
Pos
1
V
DIV
1
100
10
mV
DIV
7
8
Dehnung
MAG. x10
ext
x1
intern
40Hz
2
10
Horizontal
INPUT
1MΩ
9


SGD-21 BN 454
Pos
1
fmax/kHz
70
200
700
fmax/MHz
20
7
2
7
20
U
ext
±3.5V
11
Dehnung
MAG x15
x1
ext.
2
10
intern
40Hz
12
f-Diskrim.
200Hz ... 20MHz
0dB ... 40dB
13
INPUT
>100kΩ II 50pF


SGR-21 BN 583
14
15
Kon-
trast
16
17
normal
Ref. Lin. Horizontal
dehnungsabhängig
MAG. DEPEND


SGR-22 BN 592
14
15
Kon-
trast
16
17
normal
Ref. Lin. Vertikal
dehnungsabhängig
MAG. DEPEND


SGM-21 BN 582
14
15
18
Kon-
trast
16
Ref. Linie
f-Marke
ext. Mark. Puls 1...10V
Ri=10kΩ
19



Plug-in Units for Display Unit

Operating Instructions

1 Position
Shifting the screen image; shifting range at full expansion: Vertical amplifier ± 5 screen heights, Horizontal amplifier ± 5 screen widths.

2 Expansion
Enlarging the screen image; expansion factor adjustable from 1 to 10 (with SGD-21 from 1 to 15).

3 Polarity
Forming the input signal: "normal" or "inverted".

4 Input
Umbalanced, Z_{in} = 100 kΩ
Additionally, the signal also can be fed in by means of the system connector on the main frame.

5 Operating mode
Presentation of the measurement signal: "linear" or "logarithmic".

6 Display
Change-over of display: "slow" or "fast" (strong or weak noise suppression).

7 Zero point
Adjust with connected test object:
Button pushed, shift zero point with "Position".

Sensitivity
3 exact steps, each raises the sensitivity by a factor of 10. Given values valid for expansion, x 1; adjustable with expansion control for in-between values.

9 Input
Balanced, Z_{in} = 1 MΩ.

10 Deflection
"normal extern": normal deflection by means of externally applied signal.
"intern 40 Hz": deflection by means of internal triangular wave generator having fixed frequency.
This is useful for transit times >1 s. The reference traces from SGR-21/22 form a flicker-free electronic inner raster which is independent of the externally applied deflection voltage.

11 Frequency range
Matching to the swept range of frequencies. In the position "V_{ext}", the input signal is directly routed to the horizonal amplifier (by-passes the discriminators).

12 Blanking
" " : blanking the retrace of the beam,
" " : trace and retrace of the beam are displayed (e.g. with triangular wave sweep).

13 Input
Coaxial, Z_{in} = 100 kΩ ‖ 50 pF
Additionally parallel input to the back panel of the main frame.

14 Position shifting
Shifting the reference traces on the image screen.

15 Intensity
Making the trace more prominent: depress push button
A frequency marker can be represented on an intensified horizontal reference trace.

16 Contrast
The potentiometer adjusts the intensity of those reference traces whose push buttons are not depressed.

17 Operating mode
"normal": The position of the reference traces on the image screen is independent of varying the controls for position and expansion.
"expansion dependent": The position of the reference traces varies with the controls for position and expansion. The absolute values (level or frequency) of the traces remain the same.

18 External frequency markers
Representations of the possible external frequency markers:
" " Itensify the measurement trace.
" " Blanking the measurement trace.
" " Vertical dash corresponding to the vertical reference traces. Intensity controllable (push button or "Contrast" control).
" " Pulse added to the measurement trace.
" " Pulse added to the horizontal reference trace which is identified by the depressed push Ref. trace button.

19 Input
Balanced, Z_{in} = 10 kΩ
Additionally, the signal also can be fed in by means of the system connector on the main frame.

20 Position
Shifting the image, shifting range ± 1 dB.

21 Calibration
Depress push button. Three traces appear on the scope screen + 2 dB, 0 dB and - 2 dB.
Calibration traces + 2 dB and - 2 dB can be shifted to any optional position by means of the magnification control; however, the base line trace of 0 dB remains constant. The base line is not as intensified as the calibration traces.

22 Sensitivity
Input sensitivity of the amplifier, range from 0 dB to - 56 dB referred to screen centre, switchable in steps of 2 dB.

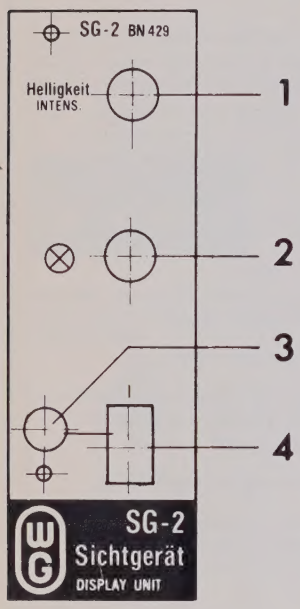
23 Impedance switch
balanced input: 150 Ω or ≧ 10 kΩ,
unbalanced input: 75 Ω or ≦ 50 kΩ.

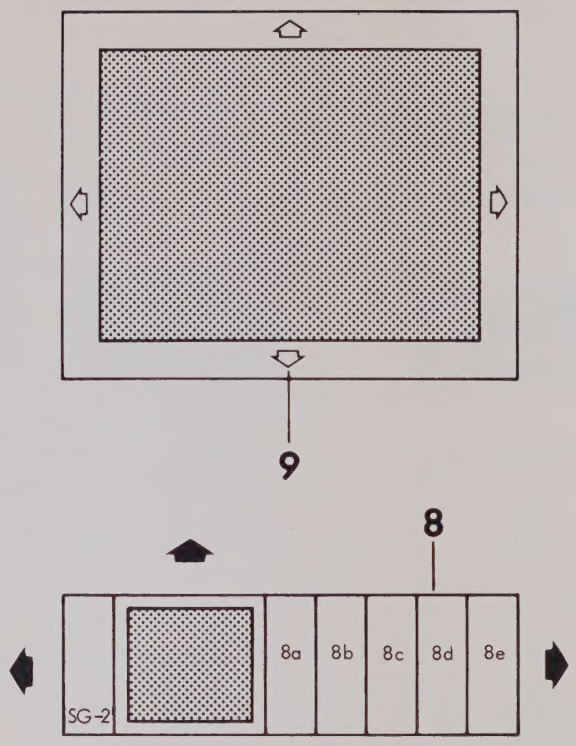
24 Magnification
For calibrating the scope screen with the values + 2 dB and - 2 dB.
Adjustment range of ± 5 dB/image to ± 1 dB/image, stepless.

25 Input
Balanced; Z = 150 Ω, 6 kHz to 620 kHz.

26 Input switch
Choice of inputs: balanced or unbalanced.

27 Input
Unbalanced; Z = 75 Ω, 6 kHz to 20 MHz.

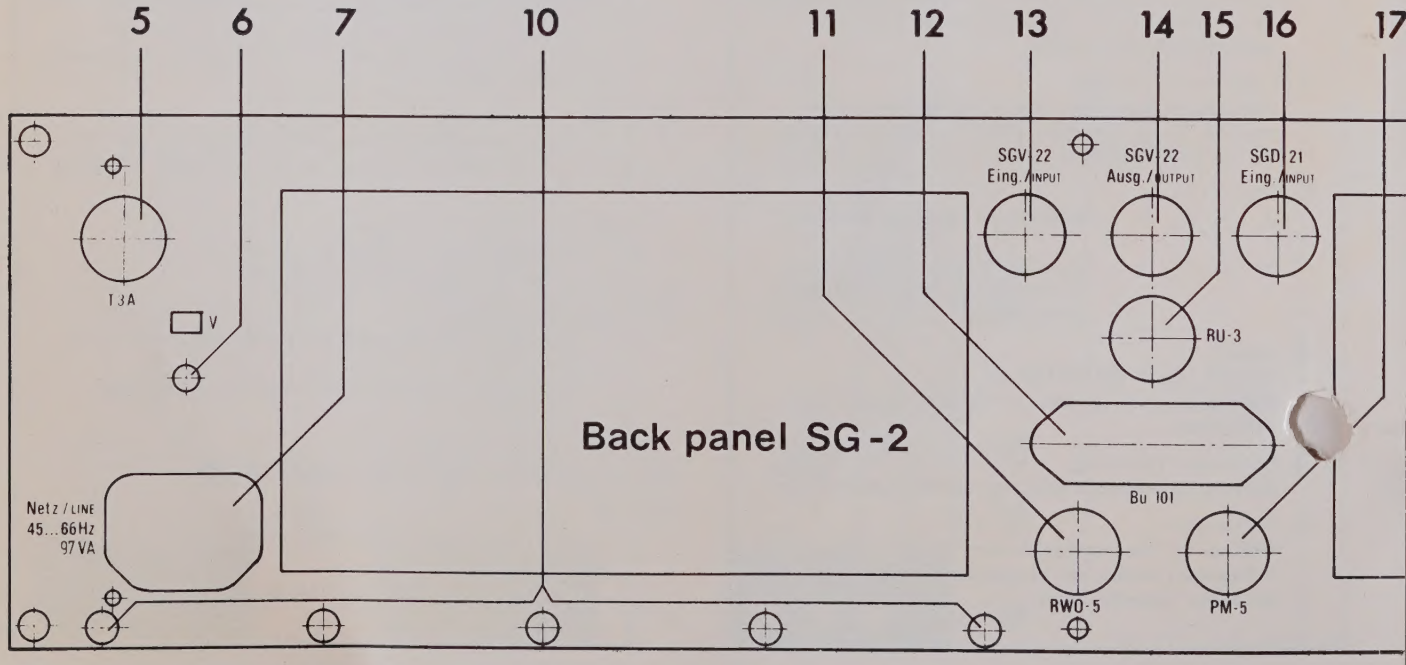




Arrangement of the Setup

Plug-in \ Place	8a	8b	8c	8d	8e
SGV-21			■	■	■
SGV-22			■		
SGV-23			■	■	■
SGP-21			■		
SGH-21		■			
SGH-22		■			
SGD-21		■			
SGR-21				■	■
SGR-22	■			■	■
SGM-21	■				

Arrangement of the Plug



Back panel SG-2

8a 8b 8c 8d 8e

SGM 21 SGH 22 SGV 23 SGV 23
SGR 22 SGH 21 SGV 22 SGV 21
SGD 2 SGR 21
SGR 22

MP MASTER
MA33513

SG...
H - HORIZONTAL
V - VERTICAL
R - REFERENCE
D - SPEED DISCRIMINATOR
M - SPEED MARKERS

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